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Final Report

V-89-09-0320

89000422

The Market For Organic Foods

Funded by
The Agriculture Development Fund
December 1990

101-01579/

THE MARKET FOR ORGANIC FOODS. A CANADA WIDE SURVEY 1990.

FINAL REPORT
DECEMBER 1990

For

Saskatchewan Department of Agriculture and Food.

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December 1990

Funded by:

Saskatchewan Agricultural Development Fund

Project No: V-89-09-0320

Preamble.

This study was funded by the ***Saskatchewan Department of Agriculture and Food*** with the purpose of investigating the potential market for organic foods in Canada and to identify opportunities for Saskatchewan producers.

Organic foods were considered to be those which are produced in an environment which is certified free from chemical fertilizers and no chemicals have been added during the growth phase.

The survey was conducted between May and December 1990 and involved a mail survey to producers of organic foods, retailers and distributors of meats and fresh fruits and vegetables. Food processors were interviewed by telephone. A total of 110 producers , 32 retailers and 23 food processors responded to the survey.

While the sample of producers must be considered bias since all of the participants were involved in organic farming, the retailers and food producers were selected to ensure that the major Canadian players were involved in the survey.

The sample cannot be considered to be statistically accurate since a convenience sample was used for the selection of organic producers. However the results of the survey do provide the reader with an indication of how the market for organic foods is growing and the forecasting system provides the best available information on how the market for organic foods will develop.

The results to this survey must be considered exploratory in that they provide an indication of where the industry is headed but the method of sampling prevents presentation of the results with statistical accuracy. This survey does represent the views of the major retailers and food processors and thus provides an assessment of where the industry is headed.

Summary:

Results from this study indicate that the market for organically produced foods is going to remain a permanent part of the Canadian food market.

Slow growth is expected until the turn of the Century when the market is predicted to be approaching 10% of the food market. A more rapid increase in growth is then predicted with the market having the potential to attain 25% of the food market by 2010.

Organic produce is expected to maintain its premium price until at least the turn of the Century. Many industry participants predict that organic products will always maintain a price advantage. Three years ago consumers stated that they would pay up to a 25% premium for organically produced vegetables. When supermarkets added organic fresh vegetables into their product mix the results were disappointing. Many supermarkets have left this market segment, stating that the market will only increase in size when the premium price is eliminated. However, when food processors were contacted, both at the national and the regional level, a number indicated that they were considering the addition of organic to their product line. since research had indicated a considerable demand for organic products.

It would appear that the market research, being conducted by the food processors, is contradicting the experiences of the retailers. When a consumer purchases fresh fruit or vegetables in a supermarket and compares the price to the organic produce the consumer can "see" little advantage or rational for the organic product which may be three times the price. Food processors who add little value to the product, eg canned beans or vegetables, suggest that the price of the product will have to drop before volume increases. However, producers who add more value to the product, eg those who use the produces as an ingredient in the manufacturing process, indicated that they can position their product in a market segment which is growing and which will be prepared to pay a premium price. These manufacturers have the power of large marketing budgets which can be used to educate the consumer and the consumer finds it more difficult to make a price comparison when the "fresh product" has been processed.

Many of the national food producers are at the research stage of product development and the next 12 to 24 months should provide an indication of the future growth in this market. A number of the national companies indicated that the demand has been substantiated and now they are attempting to obtain supply. If these initial companies are successful in launching their organic product they will have

succeeded in informing the consumer and this may in turn encourage the consumer to seek the organic label on products with less value added thus increasing the size of the market.

Consumer education is required to inform the consumer about organic foods. All respondents indicated that the term "Natural" was confusing and misleading; that the consumer could not distinguish between "organic" and "natural"; and that the consumer equated the term "Natural" with products which contained few or no chemicals.

Supply and distribution channels are a major problem in the industry. The majority of producers are small and are not able to provide the quantity and quality of produce required by the large supermarkets and food processors. Those national processors who were looking at entering the market found continuity of supply to be a restraining factor.

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Implications for Saskatchewan.

From the interviews undertaken with the major Canadian food manufacturers it would appear that there will be a market for organic products. The food processors who showed the greatest interest in the organic market were those processors who used the fresh product as an ingredient in their food production system, as opposed to those processors who only preserved the fresh product for later use by the consumer.

Grains can be considered as ingredients in vegetable oils and other oil based dressings as well as the basis for pastas and cereal grain products. Each of these product groups represent the type of product that food processors considered ideal for the organic label. Products produced in these categories can be differentiated from competitive products using traditional marketing techniques and food processors considered the potential market to be willing to pay a premium for the product.

Representatives of food processors in these product groups indicated that their market research had established a consumer demand and they were now in the process of establishing a source of supply. This was proving a challenge since most of the producers are small and can only deliver small quantities of grains.

A number of the national food processors attributed the potential popularity of the organic food market to the aging Canadian consumer who is becoming more environmentally aware and more conscious of their diet. Processors were of the opinion that this target market would pay a premium for the organic product and they did not see this premium being eroded in the short term.

These results suggest that organic farming may be a viable alternative for some prairie producers. The expected increases in market demand may encourage those producers who are currently involved in organic farming to increse tha acerage devoted to organic produce. New entrants may also be attracted to the market by the profit potential generated by organic products.

The next 12 to 18 months will be critical in the development of this market as the national food processors continue to explore this market. Should these companies enter and their product is successful it is likely that rapid growth will follow as other national food processors enter the market. Should this occur in the next two years it is unlikely that domestic supply will be able to meet the demand requirements.

Recommendation.

This report recommends two additional studies to confirm and explore in greater detail the following two issues:

To conduct a study which will focus on existing organic producers, specifically those located in the Prairies, with the purpose of providing quantifiable data on input cost savings and yield reductions. In the existing study respondents were asked to estimate their cost savings and yield reductions. The average input cost reduction was stated to be 18% with a 6% yield reduction. These figures need to be substantiated with operating data.

To conduct a more detailed interview with the top twenty food producers located in Canada concentrating specifically on those who have expressed an interest in utilizing the organic label. This study would attempt to determine volumes anticipated and delivery requirements for the different grains produced in the prairies. If the major food processors enter the Canadian market in the short term it is likely that their grains may be purchased from Europe where production volumes are larger and the organic market is more mature.

1.0 Summary of the Survey Results

Where is the organic food market headed ?

1.1 Is organic a fad ?

All respondents indicated that Organic farming is here to stay but retailers were less optimistic towards the long term survival of the market. Retailers expected the organic movement to be present well into the next century but some were of the opinion that the fad would end before 2010. Producers stated that organic farming would never disappear and this statement was supported by the food processors. Ten major national food processors were contacted and they all indicated that the organic segment was here to stay for the long term.

When the retail, wholesale and processing participants (using only firms with sales over $500,000) were split between those currently involved with organic foods and those who were not, both groups predicted that the organic market would never disappear. Interestingly, those involved with organic foods were not as optimistic on the long term future of the market. The reason for this was that some supermarkets who had added fresh organic foods to their product line thought that the fad was already over. Evidence from the processing sector would not support this opinion.

1.2 Expected growth in the organic market

The organic market is also expected to grow from its existing 3%, with producers anticipating accelerated growth during the first five years of the next century. By 1995 producers expect organic foods to represent 10% of the food market and this will increase to 15% by 1998/9. The turn of the Century should see the organic food sector representing 20% of the food market, growing to 25% by 2005 . This is the most optimistic forecast and is made by producers who are involved in organic farming. A more realistic forecast is provided by retailers and food processors.

Retailers and food processors showed considerable similarity in their forecast for market growth - growth will be slow to the turn of the century when it will represent about 10% of the market. Whether the market would expand beyond this point became a more contentious issue with some food processors suggesting rapid growth while others saw the market peaking at 10%. The role of price and supply play a critical role in the development of the market past 10%:

Organic will represent:	Producer	Retailer	Processor Organic	Processor Non organic
10%	1995	1998	1998	2000
15%	1998	2003	2003	2005
20%	2000	2005	2009	2009
25%	2005	2008	2009	2010

Retailers see a faster rate of growth once the market reaches 20%, but the retailers prediction of initial growth in the market does not occur as early as that predicted by the producers. Food processors are less optimistic seeing very little growth in the market prior to the turn of the century. Two issues concern the food processors. Those who add little value to the fresh produce indicate that the premium price is limiting the market while those who add value and see a significant market are concerned about volume of supply. Food processors suggested that the market may peak at 10% or it may increase rapidly as supply increases and technology reduces production costs.

When the predictions made by retailers (excluding health food stores), wholesalers and processors were arranged by, those who are currently involved with organic produce and those who are not, the following growth forecast was obtained:

Percent of food market	No Organic	Some Organic
10%	2002	1997
15%	2005	2003
20%	2007	2007
25%	2010	2010

Those who are involved with the marketing of organic foods are more optimistic towards initial growth in the market. Following the turn of the century both groups predict similar growth rates.

It may be more reasonable to support the pessimistic market forecast which suggests low growth to the turn of the century. This report will indicate that current Canadian volumes of organic produce are limited. New producers require a minimum of three years for certification so it is unlikely that significant increases in production could be made until 1995 at the earliest.

Many retailers and those food processors, who add little value to the product, are concerned with the high prices that organic foods command and are of the opinion that these high prices will limit consumer demand. However, all respondents indicated that organic foods will maintain their

high price. The processors who add more value to the product (eg pasta's, oils, salad dressings) will position their product as a premium product and their target market is not considered to be price sensitive. The promotion of these products will increase consumer awareness of organic foods and this could lead to an expansion of the market to include processed produces which contain less added value (eg frozen or canned vegetables or fruits).

1.3 What will cause this growth.

The literature identifies two factors which may cause the organic food market to grow:

- government regulation of agricultural chemicals
- demand by food manufacturers.

When asked to predict the timing of events affecting both demand and supply in the market the views of retailers and food processors were very similar.

1.3.1 On the production side:

When all of the respondents were asked to suggest a date when government regulations would limit the use of chemicals and fertilizers, the majority indicated that this would not occur until 2003 with responses ranging from as early as 1996 to as late as 2010. Canada was considered to be a "clean" country unlike those N European countries who have polluted the ground water table and are now required to significantly reduce their dependence on agricultural chemicals. Many food processors considered the Canadian chemical market to be well regulated - far more so than the USA - and that current regulation was sufficient to control the use of agricultural chemicals.

Retailers thought that consumer pressure would curtail the use of chemicals in agriculture by 1996 but it is interesting to note that the retailers do not see a corresponding increase in the demand for organic produce until 1998. Retailers foresee government regulations limiting the use of fertilizers by the year 2000, somewhat earlier than producers. Food processors did not anticipate the consumer having any impact on the use of fertilizers in agricultural production until the turn of the century. This view was also held by those retailers, wholesalers and processors not involved with organic produce. Those who were involved with the organic market thought their might be some consumer pressure just prior to the turn of the century.

In Europe and the USA water tables have been polluted due to excessive use of fertilizers. This has not occurred in Canada which is viewed as a "clean" country. The pollution pressures are not as great in this country so government intervention is unlikely to occur in the short term and consumer pressure is unlikely to play a major role in the reduction of fertilizers in the short term.

However, organic producers felt that there would be drastic reductions in the use of fertilizers in the production of grains by the year 2000. In this instance the forecast ranged from reductions as early as 1995 and certainly by 2005. This may be an optimistic forecast from an interest group. However their may be reductions in the use of chemicals for a number of reasons:

as production costs rise and market prices fall less may be invested in agricultural chemicals. In 1986 Saskatchewan producers invested over $320 million in fertilizers, by 1988 this had fallen to $273 million. (Agricultural Statistics 1988, p16)

the study indicated that many of the Prairie producers were concerned with the health hazards associated with chemicals

today's consumer is concerned with the environment and if some of the major food processors are successful in their launch of organic products increase consumer awareness may translate into an increased demand for crops produced with fewer chemicals.

Genetic engineering techniques and the introduction of new strains of grain were not expected to have any impact on grain production until the year 2000.

One of the criticisms of prairie agriculture has been its dependence on grain production and, concurrent with the reduction in the use of fertilizers, the producers also suggested that there would be a return to the mixed farming concept on the prairies by the year 2003. The views of the Saskatchewan producers and those from other parts of Canada were identical.

As for grain prices, participants did not expect these to return to a "healthy" level until 1995 at the earliest, with the majority suggesting the year 2000 and the upper end of the forecast was 2005. In this instant the spread of the Saskatchewan responses was somewhat greater than the total sample suggesting there are some optimistic prairie grain producers who see an improvement by 1993/4 and some prairie pessimists who do not see any improvement until 2006/7.

In summary, traditional farming techniques in Canada are unlikely to change dramatically prior to the turn of the century. Fertilizers are likely to be used in similar quantities and chemicals will be used for weed control. However the price of grain is likely to force a change in prairie agriculture. Diversification will be an issue and one option will be organically produced crops. The following sections indicate that consumer demand for healthy foods is likely to increase as the population ages and food processors are examining the possibility of adding organic foods to their product range.

1.3.2 On the demand side:

While producers, retailers and processors currently marketing organic foods expect the supermarket to be demanding organic produce by 1995 those not currently involved with organic foods do not expect to see supermarkets demanding organic food until the turn of the century. The variation in the forecast by the non-organic group was very wide with some respondents indicating supermarket demand by 1997 while others could not foresee the day when such a demand would exist. All food processors were of the opinion that this demand would materialize prior to the turn of the century.

Producers, retailers and processors of organic foods do not expect supply to exceed demand until the year 2005 and it is in this period that the fastest growth in the organic market is expected. Those not involved with organic products expect supply to exceed demand prior to the turn of the century, implying that this group anticipates little growth in the market from today's size. This more pessimistic forecast is influenced by the retailer and distributor opinions since food processors not involved with organic products do not expect supply to exceed demand until the year 2000. Many of the national food processors were of the opinion that once consumer awareness increased suppliers would be hard pressed to maintain demand. Continuity of supply was considered to be a significant factor for these companies.

Who is right ? Those currently in the organic market can be expected to be optimistic. Some retailers feel that the consumer will not pay the premium associated with organically produced vegetables and fruits. Food processors are of the opinion that there may be a market for organic processed foods where the price comparison is harder to make and nutrition will be a significant component in the consumer's decision to process.

"The premium price held by organic foods will disappear by:" was the question asked in the survey. *Every group indicated that this event would not take place until the beginning of the next century.* Even the retailers, distributors and processors who were not involved in the production of organic foods did not expect to see the premium price disappear until after the turn of the century. This group only showed mild agreement to the statement " *The expansion of the organic market is hindered by the high retail price rather than by supply limitations"* Those involved with organic products tended to be neutral towards this statement. Retailers tended to agree , producers disagreed and food processors were neutral. National food processors whose research indicated that their was a market for organic indicated that market expansion was being hindered by supply, while those who added little value considered price to be the constraining factor. National food processors also indicated that lack of consumer awareness was a major constraining factor in market expansion.

The introduction of organic foods by both regional and national food processors will occur in the next five years. The only group to be more pessimistic with this forecast were those retailers, distributors and processors not involved in the organic market. This group indicated that regional food processors would enter the market over the next five years but national companies would not participate during the current decade. Interviews with national food companies indicates that a number of these corporations are currently considering the addition of organic foods to their product range and the development of this market is of great interest to all of the processors.

Nobody anticipates food manufacturers to move totally to organic ingredients until well into the next century, if at all. Suggesting that organic products will be accepted by a sizable market segment but not by the total market. Total market acceptance would only be brought about by the elimination of fertilizers and chemicals in the food production system and the previous section indicated that this is unlikely to occur.

Initial stimulus in the demand for organic foods may come from small regional food processors as early as 1996/7. Saskatchewan producers were more focused in their forecast suggesting this would occur between 1993 and 1997, while the total sample felt that this may occur somewhere between 1993 and 2000. Interviews with thirteen Saskatchewan food processors revealed that five of these companies were currently adding organic products to their line and that a further seven were considering or had considered the addition of organic to their product line. Half of the ten national food manufacturers contacted were actively exploring the addition of organic products to their line

based on market research which indicated a consumer demand. The remaining national producers were actively monitoring the market. These market activities would suggest that the stimulus for growth has arrived.

Fastfood outlets will not focus on "organic" ingredients until the year 2000 but will start promoting the term "Natural" in the next five years.

The producers did not like the term "Natural" and expect it to be banned as a descriptor by the year 2000 however retailers and processors consider this term more favorably and are less inclined to see the term being abolished. This latter group concedes that the term may be abolished after the year 2000. The study has indicated that market growth is likely to be generated by the food processors. These organizations were successful in creating a market segment using the term "Natural" or "Lite". One industry source suggested that "Lite" products have captured 20% market share in each product group they have entered. Some of the national food processors indicated that their may be a similar market niche for "Organic" products.

Advertising and promotion play a very significant part in determining market share for food processors and it is unlikely that the industry will "give up" the term "Natural". However many of the food processors want to see the term restricted in use and in the words of one respondent:

> *Today's consumer is totally confused on the terms of organic and natural. Both terms have been prostituted and the consumer can't tell the difference. Before any survey of any consequence can be determined, we have to have a clear cut decision on the legality of using and defining the terms "natural" and "organic". (A National Food Processor)*

In summary, growth in the organic market will occur and will be demand driven. Supermarkets in both Canada and the United States would disagree with this statement since they have had poor sales results from organic fruits and vegetables. Not only is the price considerably higher but an expensive audit trail must be maintained to ensure the integrity of the product. Food processors have indicated that they intend to enter this market. By adding value to the product and with the correct positioning of organic processed foods a sizable market segment may be achieved as the Canadian population ages and becomes more concerned about their diet.

1.4 The Industry perception of the consumer

All groups held similar views concerning their opinion of consumer's attitudes. Their was some differentiation particularly when the respondent had a particular self interest. For example retailers and food processors both indicated that price and quality were very important in the consumer's decision to purchase while producers agreed with the quality statement but did not think that the consumer was motivated by price.

Respondents are of the opinion that the consumer is confused and requires education on the differences between "Natural" and "Organic", if the organic market is to maintain its price advantage and grow in size. Support for this statement is derived from the responses to the following statements:

> All respondents agreed that *the consumer cannot differentiate between the term "organic" and the term "natural".* They also agreed with the statement that *the consumer associates the term "natural" with a product which contains either fewer or no chemicals.*

All respondents felt that the consumer was not overly concerned with the chemicals and additives that appear in food and that the consumer would not place the need for a healthy diet over the cost of the product. They also indicated that the organic market will only be a small market, but they also disagreed with the statement *that the organic market will be limited to health food stores in the next five years.*

Respondents (excluding producers) agreed that when the consumer is shopping for food they are motivated by price and that appearance is used to judge the quality of the fresh produce.

However, the producers were neutral to the statement, *that the appearance of organic foods would have to be improved before the organic market could be expanded,* while retailers were of the opinion that the appearance of organic food would have to be improved before the market can be expanded. Food processors tended to disagree with this statement but this would be expected since appearance of the fresh product is unimportant to those processors who use the fresh product as an ingredient. Processors who preserved the fresh product agreed with the above statement.

While the respondents indicated that consumers are more health conscious today than they were five years ago, their was disagreement with the statement *that consumers place the requirement for a healthy diet above the cost of the product.* The organic producers tended to agree with this statement while retailers and food processors disagreed with this statement.

Retailers and some processors indicated that preservatives may become redundant through advances in packaging by the turn of the Century, thus eliminating one consumer concern.

Producers disagreed with the statement *that market expansion is hindered more by high price than supply limitations,* suggesting that the market is not price conscious. Retailers and manufacturers disagreed or were neutral to this statement but tended to agree with the statement *that the market is hindered by high prices and not supply constraints.* Some of the national food processors, who had identified a market demand for organic products, stated that supply limitations would limit market expansion.

In summary, consumers are still motivated by price when purchasing food and, while they are concerned about a healthy life style and diet, this will not be obtained at any cost. Price and appearance are two major determinants that affect the consumer's decision to purchase and consumers are considered to be only mildly concerned with chemicals in food. (The food is on sale in a store and health regulations suggest that the food must be safe or else the store would not sell it.) The terms "Natural" and "Organic" are considered to be one and the same and the term "Natural" is thought to imply fewer or no chemicals. The industry will have to deliver a major advertising campaign to educate the consumer about organic if the product is to maintain a price advantage. Emotional advertising of "healthy" food products has become popular in the USA but Canadian advertising regulations may limit this approach.

1.5 Demand for organic produce.

Later sections of this report will indicate that demand for organic food is limited. Many of the earlier studies have indicated that the consumer is willing to pay a premium for organic food. When the consumer is faced with the choice of organic vegetables or non-organic vegetables at one quarter the price, the demand for organic has not materialized.

Section 2 of this report will identify two factors which may increase the demand for organic foods:

the reduction in the use of chemicals in the production process

the introduction of organic foods by food processors.

Regional food processors are now introducing some organic produce and national food manufacturers are expected to move to organic ingredients by the turn of the century. In part

this move would explain the increase in demand between 2000 and 2005.

1.5.1 Perceptions of consumer demand.

The rate of product adoption, as outlined in Section 2.2, may be considered to be slow but, as Section 3.2.1 will indicate, the consumer is faced with a number of conflicting decision criteria when deciding to purchase organic produce.

While the consumer is concerned with a healthy diet they are also concerned with balancing the family budget. Traditionally non-organic produce has been available in the supermarket and the non-organic food which is available in the supermarket must be safe to eat since it is in the store. Since organic food is so expensive the consumer has a difficult time justifying the additional expense associated with organic foods.

1.5.2 The retailers perception of the Consumer.

The retail survey indicated that the consumer is concerned with price and with the quality of fresh fruits and vegetables. Retailers also indicated that the quality and appearance of organic produce would have to improve before there was any significant increase in demand. Retailers were more inclined to believe that market expansion is hindered less by supply and more by price, while producers tended to state the opposite. Retailers agree that the consumer is more health conscious today than they were five years ago but the consumer still considers price to be a greater motivating factor in the purchase decision.

Retailers were neutral in their opinions concerning the consumer's attitude towards chemical residues on fresh foods and the use of chemicals in food preservation and colouring. They also suggested that the consumer could not differentiate between the terms "Organic" and "Natural" and that consumers equated the term "Natural" with products which contained fewer or no chemicals .

The retail respondents were the least optimistic on the future of the organic market with some of the respondents indication that the fad had already passed. Their pessimism is derived from experiences obtained in the sale of fresh fruits and vegetables. Following the Alar incident in 1988 many supermarkets in California introduced organic produce into their stores. As discussed in a later section of the report many of the supermarkets are now removing these sections from their stores. The audit trail is difficult and expensive to maintain and, more importantly, the expected demand has not materialized. Many retailers indicated that

the high price restricted growth and have indicated that if the price drops then demand will increase.

When the consumer purchases fresh fruit or vegetables they are purchasing a product with no value added. An organic apple may be three times more expensive than one which is produced under "typical" conditions and that apple may not look as nice. Now the apple produced under typical conditions is on sale in a supermarket and the quality of the food sold in stores is governed by the Department of Health. Therefore the apple produced via typical farming methods must be safe - so why pay more for an organically produced apple ?

1.5.3 From the food Processor.

Food processors indicated that the consumer was primarily motivated by price and were neutral to the statement that the consumer is motivated more by quality than price.

In many respects the views of the manufacturers did not differ from those of the retailers agreeing that:

- appearance is used to judge quality
- consumers are more health conscious
- "Natural" equates to fewer or no chemicals
- Organic appeals to a small but growing group

But food processors who used fresh produce as in ingredient in their manufacturing process disagreed with the statement that the appearance of organic foods would have to improve before the market could expand. The food processors who produced the fruit or vegetable in a preserved condition indicated that the appearance of the product was a concern and the current quality standards would have to be maintained.

Also manufacturers were more likely agree with the statement that market expansion was being hindered by supply limitations rather than by price. Again the response was affected by the nature of the production process. When the product was being used as an ingredient then supply was the limiting factor. When a preserved product was being produced then price was the limiting factor.

A food processor is more concerned with reliability of supply and specific volumes than the supermarket since a production line must be supplied. Price is not such a restricting factor since the processor is adding value to the product and the consumer cannot make the same price comparisons as they can with fresh fruits and vegetables. Also the food processor has the "power" of marketing

available to create a particular image in the consumer's mind - an advantage not available to the supermarket.

2.0 Why organic ?

2.1 Exploitation of arable land - voluntary or government legislation of chemical and fertilizer use.

An Environmental Perspective

In recent years there has been a significant consumer interest in nutritional and chemically safe foods and it has been this movement which has spurned the growth of the organic movement. However there is one other contributing factor to the growth of this market which should not be ignored.

The total amount of arable land, available in the world, for crop production is fixed. During the 1970's, as prices and demand for food, particularly wheat, remained high additional acres were brought into production. As supplies of highly productive land diminished marginal land, requiring irrigation, was brought into production. Almost all the land capable of being irrigated is now in use. In recent years, the proportion of growth, in global agricultural production, derived from the expansion of cultivated areas, has declined indicating that the quality of the land, being brought into production, is declining. In areas like Brazil, the Amazon jungle is being cleared to produce farm land. However this land can support one of two crops before becoming exhausted. This is fragile land and is all that remains for additional cultivation.

There is concern amongst environmentalists and consumers that we have over exploited some of the world's land base. In order to turn marginal land into productive land chemical have been added and the water table has been lowered to provide irrigation. These chemicals have entered the water table polluting some areas. In the fragile regions there is concern that we burn trees to expose fragile land which may be incapable of producing crops without significant inputs of chemicals which in turn can lead to the degradation of the environment.(6)

The impact of technology in agriculture is significant when one considers that between 1944 and 1988 real commodity prices fell by 46% and food prices by 50%. In the same period the production of food increased. The effect of technology has allowed yields to increase at a rate in excess of price declines. Government subsidies have also created an impact on production levels (7)

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6 Why the current concern about food supply. Kelly White
UDSA Economics Research Service July 14 1989.

7 The World Food situation in perspective. Francis Urban and Auther Dommen UDSA Economic Research Service July 1989.

The U.S. Office of Technology Assessment forecasts that over the next 20 years growth in food production will have to remain at about 1.5% per year and over 60% of this increase will have to come from yield improvement derived from new or existing technologies.(8)

The major component that has been added to the soil has been fertilizer, together with a variety of other chemicals used to control weeds and other pests. The high use of these chemicals has created a number of environmental problems, including the disposal of the empty chemical drums. Also environmentalists have been warning that over use of these chemicals can have a harmful effect on the surface water and eventually on the quality of the land.

Many consumers are becoming increasingly concerned with the chemicals that are being used to produce crops. Can some of those fruit sprays remain on the fruit and still be on the apple or pear when it is purchased ? What impact will these chemicals have on our health ? The Alar incident of 1989 demonstrated the consumer's concern with chemicals in the food production process.

U.S. scientists have identified 40 agricultural chemicals in the ground water supply and regulatory and technological solutions are being contemplated. In the United States it is expected that the new farm bill will contain provisions relating to the use of chemicals in food production, improvements to the regulations of insecticides and fungicides, improved methods of food inspection and groundwater contamination. (9)

The newer technologies are concerned with genetic engineering and are often referred to as biotechnologies. Part of the function of biotechnology is to reduce the amount of chemicals used in the farming process and to increase yield by genetically altering the structure of the grain. There are critics who say that the U.S chemical industry is using biotechnology to support the use of herbicides. They point to the fact that 16 major chemical firms have purchased seed companies in an attempt to develop a seed which will require fewer herbicides. Environmentalists want no chemicals added to the soils since they are convinced the environment is already damaged by the high used of chemicals. (10).

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8 Technology, are we running out of steam ? The future impact of current and emerging technology on agricultural production. Mary Knudson and Margot Anderson. UDSA Economic Research Service July 1989

5 Agricultural Policy - food and environmental safety becoming more important. UDSA Economic Research Service June 1989 and President Bush's Food Safety Plan UDSA Office of Governmental and Public Affairs October 1989.

6 Altered crops allow more herbicide use Athan George Des Moines Register Aug 27 1989

These environmental concerns may limit the use of chemicals in the agricultural industry and we will see a return to improved farming systems and agroecosystems in the future. In both Europe and the USA considerable research is being conducted on low input sustainable agriculture, particularly in areas where ground water has been contaminated by agricultural chemicals. Low input sustainable agriculture can mean an improved efficiency in the agricultural operation by the use of techniques of minimum tillage to a more sophisticated approach involving three to seven year crop rotation and recycling of farm waste. (11)

One criticism of this approach to farming has been the potential impact on yields; no chemicals then lower yields. Initial studies into the impact of organic farming are discussed by Hall (8) who indicates that the initial studies on the elimination of fertilizers indicated that yields were significantly reduced. However he also suggests that the methodology used in these initial studies was circa 1940's and not applicable to the environment of the 1980's. He conducted a study in 1983 for cotton and citrus farmers which suggested that the impact of chemicals on yield is less significant than first thought. Other research is concentrating on the use of technology to maintain moisture content and control for weeds (9)

While low input sustainable agriculture does not mean organic farming it does mean the production of crops with improved farming techniques which will minimize if not eliminate the use of chemicals and pesticides. Initial research suggests that production costs are higher with this approach but recent research is questioning some of these earlier findings. This portion of the paper has been to indicate that environmental concerns may dictate significant reductions in the use of chemicals in food production. The chemical reductions may be voluntary or they may be legislated.

Areas which are being forced into sustainable agriculture due to environmental degradation may find themselves at a competitive disadvantage to areas where chemicals can still be utilized in crop production. The next few years may see advances in agricultural production techniques that will provide similar yields and profits to chemically free operations. Once this situation is achieved then there will be an automatic move to sustainable agriculture as chemicals only increase production costs. The other contributor to the demand for organic foods is the consumer.

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11 Ecological Agricultural Projects, An introduction to sustainable Agriculture, Agriscience

8 Hall D C, Baker B P, Franco J, Jolly D, Organic Food and Sustainable Agriculture, Contemporary Policy Issues

9 Palmer R Research being conducted in the Faculty of Engineering , University of Regina.

2.2 The role of the consumer:

2.2.1 What factors are important in the decision to purchase food

The consumer's purchase criteria.

In the developed world, it has become increasingly difficult to identify and predict the criteria, which are used by consumers, in their decision to purchase food. Researchers must take into account the environment in which the consumer lives including the impact of social and demographic trends and how these variables affect the attitudes and beliefs that consumers hold. Wikstrom (12) attempts to show the interrelationship of these variables with the following diagram:

Technological, Economic, Ecological, Sociological and Political Changes.

Demographic Changes
- declining birth rate
- new age structure
- smaller families
- more working women

Changes in consumer resources
- zero growth in net income
- limited family time
- increased education

Changes in basic values
- future concerns
- communication

Changes in consumer attitudes and behavior
- food safety
- eating patterns

Consumer demands on the food industry
- information
- distribution
- selection
- availability

Demographic changes refer to the declining birth rates in most developed countries and also to the demographic patterns which are present in these countries. The majority of developed countries experienced a bulge in birth rates during the period 1945 to 1965. As this bulge has aged it has created a significant impact on the life style of each country's population. The bulge, often referred to as the

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12 Food consumption and consumer behavior in the future. Solveig Wikstrom in xxxxxxxx Edited by E Kynak.

"baby boomers", is now in its peak earning years with a median age of 40 years.

The "baby boomers" have always been an attractive group of consumers to marketers due in part to the large number of consumers in this category. Companies involved in the marketing of consumer goods have invested millions of dollars in dividing up this market into small segments and then developing products that will meet the needs of each segment. In todays competitive environment this form of segmentation is critical for a company's survival. Companies which try to produce goods for the mass market tend not to be successful yet those which focus their products on the needs of specific consumers are very successful.

While this market segmentation approach has been very successful for producers of consumer (and industrial) goods and services the agricultural sector has tended to ignore this approach. Yet there are aspects of food marketing which indicate that this form of segmentation is important. For example the growth of Health Food Shops and Specialty Food Stores indicates that certain groups of consumers have specific requirements. Food manufacturers have segmented the market into a number of categories, including those consumers who may be health conscious, those who are weight conscious and those who require a meal which is quick and easy to prepare but nutritious in content.

A number of major demographic trends which became apparent during the 1980's were:

- an increase in the number of dual income households
- an increase in the number of single parent families
- an increase in the number of working women
- the emergence of the YUPPIE market
- smaller families

While these demographic trends have impacted the consumers eating habits these trends cannot be treated in isolation from the social trends of the 1980's:
- better educated consumers
- concerns with a healthy life style
- environmental concerns
- amount of "quality time"

Wikstrom's article discusses how these changes have influenced the consumer's attitude towards the kind of food they require, their eating habits and their nutritional requirements and priorities. His paper reports on an

American study (13) which indicated that 44% of the families interviewed reported that at least one member of their family was overweight and that 21% of the respondents had been on a diet in the week preceding the survey. This study also showed that there was a tendency towards over consumption of expensive proteins such as fish, meat and eggs but an under consumption of basic foods such as vegetables and fruits. However, the study also indicated a changing pattern in the type of foods that were being consumed, by the respondents, with an increase in the consumption of chicken, fruits, salads and cheese but a reduction in cakes, junk foods, butter, bread and (red) meat.

Wikstrom's study focused on four central quality aspects of food:
- taste and food as a pleasure
- convenience
- nutrition and the demand for a safe food
- food prices and food costs.

While the research indicated that these four variables interact, the price of food was found to be of the least concern to consumers. In recent years, there has been a move towards an improvement in the quality of food but the overriding criteria for the 1990's is expected to focus on the nutritional and safety aspects of food. Wilkstrom indicates that in both Sweden and the USA one out of three consumers expressed concerns regarding the safety of food but only one in twenty businessmen considered that safety was a problem for consumers!

Wheelock's (14) research in the United Kingdom also demonstrates that there have been changing patterns in food consumption. He suggests the following reasons for change:

Economic. Following the second world war price controls and low disposable incomes meant that consumers were concerned with purchasing staple items. As disposable incomes have increased there has been a tendency to switch from staple items to the more expensive animal products and to foods that are easier to prepare. Also the influence of price on all food groups has diminished. For example consumers are now buying more cheese even though the real price is increasing and fewer eggs even though the real price is declining.

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13 Woman's Day Family Food Study (1978) Nutrition, a study of consumer's attitudes and behaviors towards eating at home and out of home. Conducted by Yankelovich, Skelly and White, Inc.

14 Coping with change in the food business J V Wheelock Food Marketing Vol2 Iss 3

Wheelock refers to a Harris marketing study (15) which indicated that in 1980 55% of consumers selected a store on the basis of price and 30% on convenience. By 1985 59% were selecting the store on the basis of convenience and only 35% on the basis of price.

Why the change ? Wheelock suggests that consumers are becoming more adventurous, their horizons have broadened by increased travel, the growth in ethnic restaurants and by the media. Supermarkets are more willing to respond to changing consumer tastes. He concludes that the food market is fragmenting and that food producers and retailers are now considering the concept of market segmentation.

Convenience. The growth in the number of married women working has increased the demand for foods that can be prepared quickly and with a minimum amount of effort. This has created a demand for increased food processing particularly in the area of frozen foods and microwave ready meals. Also the dual family income has increased disposable income allowing the family to buy the resources necessary to prepare these convenience foods.

Health Foods. An increasing awareness of health concerns is reflected in the type of food that the consumer is purchasing. A University of Bradford Research Study (16) indicated that 95% of consumers are a lot more conscious of what they eat today. The results suggested that consumers thought that their should be an increase in the consumption of fibre and a reduction in sugar, salt and fat.

Socioeconomic status. The Wheelock study indicated that the upperclass groups were the leaders in the changing demand for different foods and that the lower social class groups were less concerned with healthy foods and more concerned with the staple foods.

Vegetarianism. In Wheelock's study this refers to individuals who do not eat red meat, a group which has increased from 4.0% of the UK population in 1984 to 5.2% in 1985. While the overall percentage is small the growth is significant. The Gallup Poll, which produced this information, suggested that 9.9% of women aged between 16 and 24 are vegetarians. This markets segment is considered important by a number of restaurants which are now preparing specialty vegetarian dishes.

Coupled with this trend to vegetarianism is a consumer attitude towards "animal welfare". Consumers were expressing concern over the growth hormones and other chemicals that are used in the production of red meat products.

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15 Harris Marketing International

16 Food Policy Research University of Bradford

Concern over additives. A high proportion of consumers, over 85% indicated that they wished to avoid preservatives and food flavouring/colouring.

Both the Wilkstrom and Wheelock studies indicate that the consumer in developed countries is changing. Following 1945, consumer's purchases were dictated by price and availability. The food budget represented a significant proportion of the family disposable income. Today, family incomes have risen both in real terms and often with the addition of a second family income. Expenditure on food now represents a much smaller percentage of total family expenditure. Recent Statistics Canada data suggests that 18% of the family budget is allocated to food.

Also the consumer has become more cosmopolitan as the "global village" becomes reality. Increases in immigration have lead to the establishment of ethnic restaurants, travel has broadened the consumer's horizon and developed their taste buds and the impact of the media has provided the consumer with more information. The dual income household and the single parent do not have time to spend on meal preparation. They demand ready to serve meals or they eat out more frequently.

While price may remain the dominant purchase criteria for some consumers more consumers are concerned about:

- convenience
- taste
- selection
- quality
- health

2.2.2 The role of nutrition in food selection

The previous section indicated that the consumer is concerned with the nutritional aspects of food. This portion of the paper will attempt to used the studies to determine whether the consumer is more price conscious or more health conscious.

Many of the studies relating to organic foods indicate that the consumer is willing to pay a premium of between 25% and 30% for organically produced foods. In a Canadian Study (17) conducted in 1988, 53% of the respondents indicated that they would be prepared to pay a 25% premium for organic

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17 Baseline market Research Ltd, Final Report Organic Agriculture Study, 1988 Ag Canada Food Development Division

produce. A 1989 study, conducted in New Jersey, (18) suggested that consumers were prepared to pay a premium of 30% for organic produce.

However, a more recent study (19) identified 57% of the respondents stating that high price was the reason given by a number of consumers for not continuing with the purchase of organic foods. Also 41% of those who had never purchased organic foods indicated that price was the prime reason for not purchasing. In a 1990 study (20) 63% of respondents indicated that price was a very important factor in the purchasing decision.

If price is an important determinant in the decision to purchase then the market for organic produce may expand very slowly and not meet the 10% projections which are currently being forecast for the organic market.

The 1978 study (22) which examined consumers' attitudes and behaviour towards eating at home and out of the home indicated that 77% of the consumers were more interested in nutrition than they were a few years ago and the major reason for the increased interest was attributed to an increased interest in physical fitness as well as articles on nutrition. In the same study 53% of the families indicated that they eat more nutritiously than they did a few years ago and 63% considered themselves fairly well informed on nutritional issues. Despite the level of knowledge of the respondents 44% indicated that someone in the family had weight problems suggesting perhaps that our life style does not allow us to consume a "nutritionally balanced diet".

The respondents were provided with three criteria which could be used to influence the families purchase of food. 41% of the respondents were concerned with balancing the budget, 35% with watching their weight and 17% with recommended nutrients. Favorite leisure time activities included watching TV and going to the movies - both of which are associated with junk food and one in ten indicated visiting a fast food restaurant.

The women in the sample were asked what were the major barriers to good nutrition. "Pleasing the family" was suggested by 72% and the budget was also identified as a reason by 59% of the respondents.

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18 Morgan J, Marketing Organic Produce in New Jersey: Obstacles and Opportunities, Stony Brook Millstone Watershead Assn, 1989

19 Jolly D, Schutz H, Johal J, Knauf K, Marketing Organic Foods in California Opportunities and Constraints, University of California, Davis 1989

20 Packers Study

22 op cit 11

The results from the above study would indicate that the consumer is concerned with obtaining a nutritionally balanced diet but is more concerned with keeping the family well fed within the confines of the family budget.

In the late 1970's the Food and Drug Administration nearly banned the use of nitrite and saccharin in the United States, but its decision was overruled by Congress. Now the consumer was getting mixed signals from the many voices that speak about food safety in the United States. Foster (23) indicated that various agencies are warning the public about " our foods being poisoned with unsafe preservatives, unnecessary additives, toxic pesticides and dangerous chemicals." Foster's article indicates that most of these accusations are true but the quantities of chemical that enters the food chain is so small that the impact on a human is negligible. A similar argument is made by Cook (24) who makes the point that consumers would be worse off if certain pesticides were eliminated from the food production process.

While not endorsing these arguments the more important point is that consumers are being subjected to conflicting messages; one set stating that some foods, additives or production processes are bad yet the same foods are still on the supermarket shelf.

The consumer is not a biologist, chemist or nutritionist yet the media and certain government agencies are asking the consumer to make important decisions regarding their (and their families) diet. When faced with this type of dilemma the consumer will often place their trust in a brand name or a store name. If the product is being sold in the store then it must be safe to eat, provided the date stamp is not expired. In a 1989 survey (26) 81% of the respondents indicated that they were confident that the food in the supermarket was safe.

But organic foods command a 25% to 30% price premium and while lower priced merchandise is available it is unlikely that the consumers will switch in large numbers to organic produce.

2.2.3 The consumer's experience with "natural" foods

No detailed market analysis has been conducted which identifies the proportion of the buying public which purchases organic food but a number of studies have been

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23 Foster E M, How Safe are our Foods, Nutrition Reviews January 1982

24 Cook R, The Food Safety Controversy: Implications for the Fresh Produce Industry, Annual Agricultural Outlook Conference 1989

26 Op cit 18

conducted which examine the recent trends in purchase patterns.

United States Department of Agriculture (UDSA) statistics indicate the consumption of fresh vegetables has increased dramatically, up from 76.5 lbs in 1987 to 100 lbs in 1988 (27). With changing lifestyles more consumers are eating out of the home. The same study indicates that U.S. consumers spend 45% of their food dollar on food away from the home.

The trend towards health and nutrition can be evidenced in the move by manufacturers to incorporate "lite" or "natural" in their marketing campaigns (28). The A C Neilson organization recently examined this trend (29) and found that "the word "natural", may or may not be helpful depending on the consumers perception of what the term means. This word has escaped any form of regulatory attention in the area of product labeling". The Neilson research suggested that the most common meaning that could be ascribed to natural were:

1) They claim the products contain neither chemical additives nor preservatives and that certain suspect ingredients such as sugar and salt have not been added.

2) The only ingredients available in the original unprocessed food products were used to create the final consumer product.

3) That natural on the label implies that the product is nutritionally good for the consumer.

However, further research evaluated all natural food products introduced into retail food outlets within the past five years. The results suggested that the term *"natural" could be used to mean anything you wanted it to mean. "Its use on a label certainly does not seem to indicate the absence or presence of salt, sugar, caffeine, cholesterol, calories, chemical additives or preservatives, nor can it be used as assurance that the food item is nutritionally better for you".*

A United Kingdom Survey highlights how food manufacturers have taken advantage of the consumers health concerns. Van den Bergh's produce a margarine called "Flora". The advertising campaign is based on the theme "Flora project for heart disease prevention." with an annual budget of about $8 million. The Health Education Council has noted a

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27 Cook R Challenges and Opportunities in the US Fresh Produce Industry, Dept of Agriculture Economics, 1989

28 ibid

29 Carlson K O, Natural Foods, presented to 14 Annual Fall Symposium of the Flavour and Extract Manufacturers Association

high level of awareness in the UK in the distinction between polyunsaturated and saturated fats. Such a level of awareness would have been unlikely without the promotional campaign.

Bran, as a breakfast cereal is another good example of the consumer's willingness to adopt products which are stated to be nutritionally better, even though recent research results suggest the benefits may not be as great as once proposed. The consumer's purchase behaviour is unlikely to change in the near future.

All of these "natural" and "lite" products have one common feature. They do not sell at a premium price, yet they promote a "healthier" life style. Also the name allows the consumer to justify an existing life style - healthy snack food.

Organic produce does command a premium price and this may be the reason that the term "organic" will not receive the same dramatic rise to popularity that "natural" and "lite" have.

2.3 Where will the growth come from ?

All of the research studies indicate that the consumer is concerned that their food is nutritional and safe. While these may be the two overriding selection criteria, price is still a dominant factor in the decision process. The consumer is not a chemist or nutritionist and may be confused by the different messages which are being sent from different government agencies. It would appear that the consumer considers food on sale in our stores to be safe.

Products which contain "natural" and "lite" in their names have been extremely successful in recent years indicating the consumers concern for a healthy lifestyle. However, many food processors did not believe that these two terms were sufficiently regulated and that consumers were being mislead by these terms. Also these products are not sold at a premium, allowing the consumer to justify their nutritional aspirations without any additional expenditure.

In most of the studies, conducted to date into organic foods the consumer has indicated a willingness to pay a premium for organic foods. This commitment is not being reflected in the consumers shopping habits as reflected by recent surveys which indicate that consumers consider organic foods to be too expensive. Also, a number of supermarkets which introduced organic produce into their stores in mid 1988 have now removed these departments due to the low level of sales.

With the current price premiums it would appear that consumer demand for organic foods will not increase significantly in the next few years. However, food processors, who add value to a product, are currently investigating the organic market. These corporations add value to the "raw material" and this makes it harder for the consumer to make price comparisons. If these companies can identify a market niche for "Organic" then demand for organic produce should grow.

If the use of fertilizers and pesticides were to be restricted by legislation or if a move towards low input sustainable agriculture were to occur then their would be an automatic increase in the availability of organic produce. If this were to occur then organic produce would likely lose its price advantage. This scenario has occurred in parts of Europe but the survey suggests that such a scenario would not occur in Canada in the short term.

Many of the wholesalers and retailers selling organic produce complain about the lack of supply. The largest single market in the U.S. is in California and this market is dominated by small producers. In recent years a few large producers have entered the market but they still account for a very small proportion of the market.

Small operators are unable to meet the demands of the large channel members (supermarkets and food processors) who require consistent high quality and guaranteed supply. These small producers tend to have higher operating costs since they are more labour intensive, being unable to take advantage of automation. Their unit shipping costs are higher, due to the transportation of small quantities and irregular supply can lead to delays in the distribution system. These productivity inefficiencies in the industry increase costs to the retailer and consequently to the consumer.

Two related events could stimulate the potential demand:

1) an increase in the volume produced
2) a price decrease.

While the two events are linked they may not appeal to producers since the price margin is one reason which makes this market more attractive. (However most small producers entered the market for environmental reasons not for profit motives). Intuition would suggest that organic farming practices would cause a yield reduction since the lack of fertilizer must reduce yields and crop damage will be increased due to the elimination of pesticides. Some recent research indicates that yield reductions may not be as great as first thought and alternatives for weed and pest control are being developed.

By adopting low input sustainable agricultural techniques input costs may be reduced. Chemicals are one of the most significant expenses the producer has to deal with. Existing organic producers complain about the increased labour input, a factor which may be reduced by automation, as the size of the producing unit increases. If these two cost savings do materialize without detrimental impacts on yield and quality then the price of organic produce would be equivalent to conventionally produced vegetables and fruits and the demand would materialize.

However it is unlikely that producers will be influenced by these arguments and the investment required to introduce organic farming practices is significant, since the certification process takes three years. Europe is said to be five to ten years ahead of N America in organic farming. Part of the added impetus for this market has been the reduction in the use of fertilizers which have polluted water tables. For environmental reasons the Europeans have adopted more readily to low input sustainable agriculture. With the current consumer attitudes towards price it would appear that the consumer will not stimulate demand until price falls and it may take a move towards the elimination of chemicals to stimulate growth in the organic market.

3.0 Expectations for the Canadian Organic Market

3.1 Is organic production a fad ?

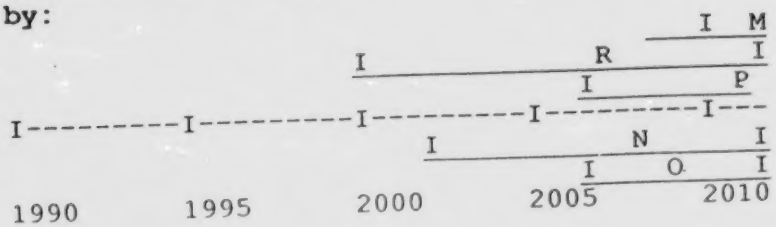
The forecasting portion of the survey asked respondents to provide their best estimate of when an event might occur. The 'P' represents the average of all Producers

'R'	Retailers
'M'	Manufacturers
'N'	Non organic group
'O'	Organic

and the distance to the 'I' shows the variation in the responses.

The majority of the respondents indicated that the organic movement would never disappear.

Organic produce is a fad and will disappear by:



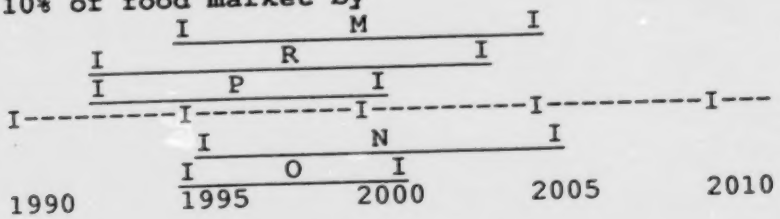
While it is not surprising that organic producers expect organic farming to be here for the long-term, retailers and processors also indicated that organic produce is not a fad but is a concept which is here to stay.

3.2 Expected growth in the market.

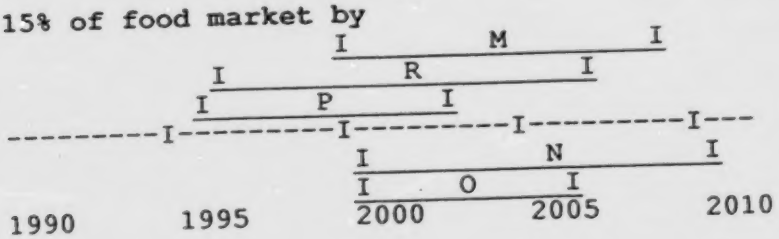
Currently organic produce represents about 3% of the total market and both retailers and producers expect organic foods to represent 25% of the market by 2005.

Organic foods currently represent 3% of the N American food market. Please indicate the approximate year when organic foods will represent:

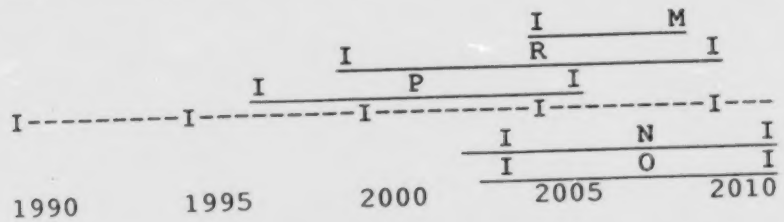
10% of food market by



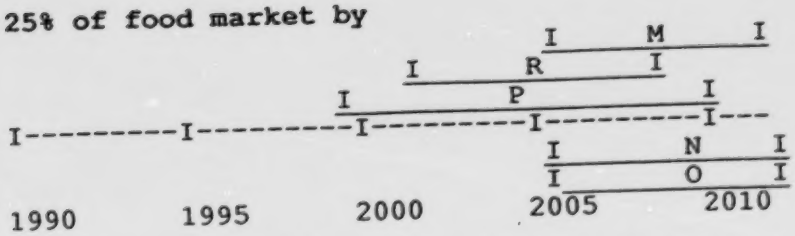
15% of food market by



20% of food market by



25% of food market by



The table below shows the difference in the expected market growth as forecast by producers and retailers. Producers anticipate a faster adoption of organic foods in the market while retailers perceive that the market will be faced with slow growth until the turn of the century and then growth will accelerate.

While there is considerable similarity in the views of both retailers and manufacturers in the forecast of the growth in the market retailers are not as optimistic as the producers:

Organic will represent:	Producer	Retailer	Processor Organic	Processor Non organic
10%	1995	1998	1998	2000
15%	1998	2003	2003	2005
20%	2000	2005	2009	2009
25%	2005	2008	2009	2010

When the predictions made by the retailers (excluding health food stores), wholesalers and food processors are arranged by those who are currently involved with organic produce and those who are not, the following is obtained:

Percent of food market	No Organic	Some Organic
10%	2002	1997
15%	2005	2003
20%	2007	2007
25%	2010	2010

Those who are involved with the marketing of organic foods are more optimistic towards initial growth in the market. Following the turn of the century both groups predict similar growth rates.

It is reasonable to support more pessimistic market forecast which suggests low growth to the turn of the century. This report will indicate that current Canadian volumes of organic produce are limited. New producers require a minimum of three years for certification so it is unlikely that significant increases in production could be made until 1995 at the earliest. Many retailers and some food processors are concerned with the high prices that organic foods command and are of the opinion that these high prices will limit consumer demand while other food processors see the aging population and its concern for a healthy diet

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Consumers use the appearance of vegetables to judge the quality of the product.	1	2	3	4	5
		R			
		P			
		M			

The elimination of chemical sprays can make produce more susceptible to insect attack and thus place scars on the produce. Consumers are use to smooth green or red apples. Will they accept apples with a blemish ?

The "appearance" of organic produce will have to be improved before the market can expand	1	2	3	4	5
			R		
			P		
			M		

Retailers are of the opinion that the appearance of organic produce will have to improve before the market can expand. Organic farmers are not as convinced and nor were some food processors. This would not be an issue of concern to food processors who use the product as an ingredient but for those processors who are preserving the food in its "natural" state and for retailers of the fresh product the appearance will have to improve before it will be readily accepted to the consumer.

Both retailers and producers were of the opinion that consumers were somewhat concerned with the amount of chemical being used in agricultural and food production:

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
The average consumer, when shopping for food in the supermarket is concerned about the chemical residues that may be present on many fresh foods.	1	2	3 R P M	4	5
The average consumer, when shopping for food in the supermarket is concerned with the use of chemicals in food colouring and preservation.	1	2 M	3 R P	4	5

All respondents marginally agree that the consumer is concerned with the use of chemicals in food processing. However, many food processors suggested that the consumer may state that they are concerned but this concern is not being reflected at the point of sale. As pointed out in an earlier section, food on sale in a shop must be safe, therefore the consumer is not concerned about safety when shopping for food, price is more important. However food manufacturers, who tend to be the main users of food preservatives and colouring, indicate that consumers are concerned with the use of chemicals in colouring and preservatives. A number of the national food processors indicated that they have moved away from artificial preservatives to naturally occuring preservatives and that salt levels have been reduced.

It is likely that as volume increases the price of organic produce will fall and producers today, looking to enter this market for profit motivation should be aware that the premium may be short lived. An earlier section reported the reason that producers turned to organic produce and very few producers reported a profit motive. The concerns for the environment and ones personal safety were considered to be far more important reasons. With the potential for grain prices to remain low, irrespective of a GATT settlement, many producers will be looking to alternate crops to supplement their income. Today organic produce commands a premium and all respondents appear to be of the opinion that this price advantage will be maintained until the end of the decade.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Consumers are more health conscious today than they were 5 years ago	1	2 R P M	3	4	5

The trend towards a healthy life style is likely to continue as the baby boom approaches retirement, but in the short term the consumer is faced with a recession and a tightening of the family budget. The questionnaire was completed prior to the current recession and at that time all respondents reported:

The majority of consumers place the requirement for a healthy diet above the cost of the produce	1	2	3 R P M	4	5
The average consumer, when shopping for food in the supermarket, is primarily motivated by price.	1	2 R P M	3	4	5
The average consumer, when shopping for food in the supermarket, is motivated more by quality than the price of a product.	1	2	3 R P M	4	5

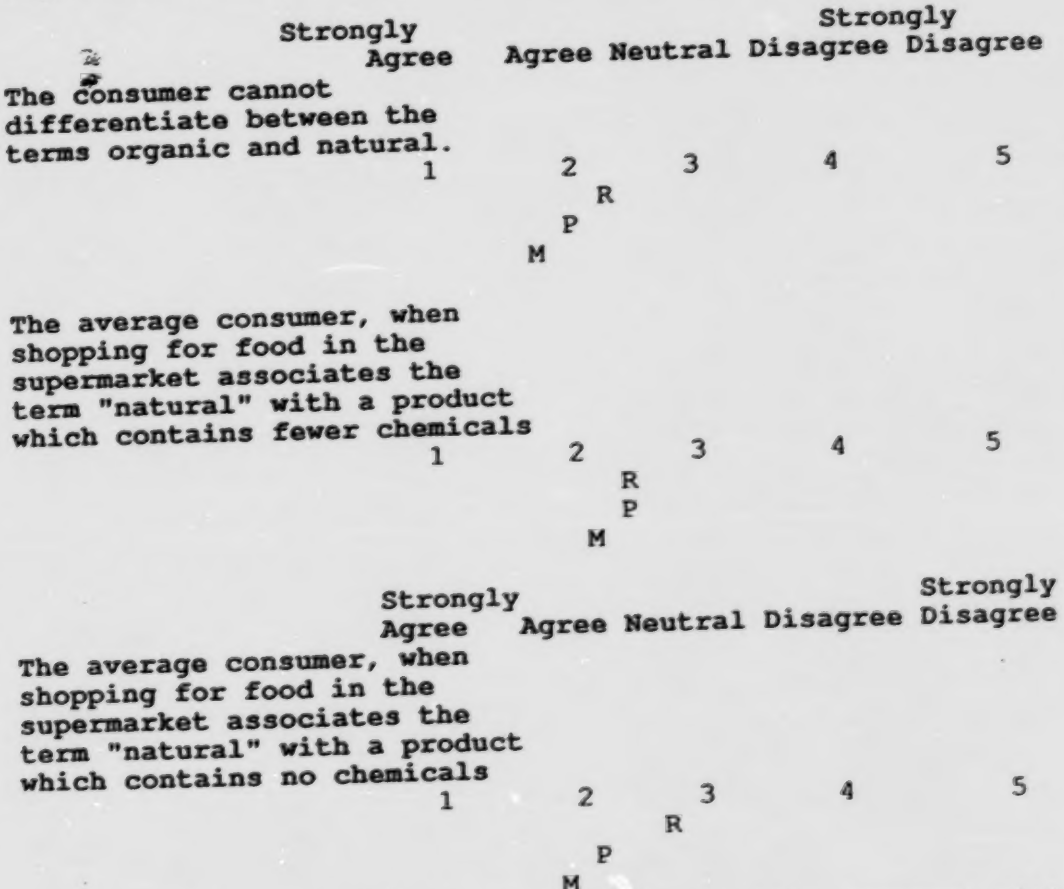
The bottom line - all respondents consider the consumer to be motivated by price and appearance. Quality and "health aspects" are important but their level of importance is secondary to price. Only the retailers, a sample which included health food stores, thought that the consumer could be motivated more by quality than price. When the opinions of the supermarkets, distributors and food processors not involved with organic produce were examined they considered the consumer to be motivated by price and not by quality. Even the converse of this group indicated neutral on the price issue and on the statement concerning quality.

These findings support the comments made on consumer decision making presented in Section 3. The consumer is concerned with a healthy diet but price is still the motivating factor in the purchase decision.

Thus while the price of organic produce remains high demand will be limited.

3.5 Reaction to the term "Natural"

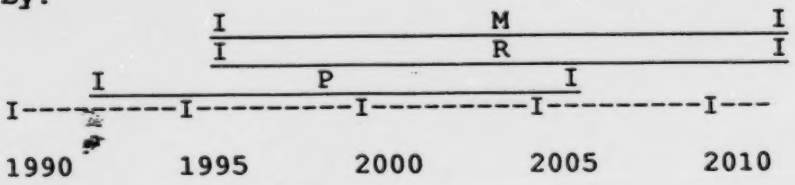
The relationship between price and health aspects is further demonstrated by the popularity of "Natural" products. An earlier section of this report referred to the consumers reaction to the term Natural. A Natural product is not an organic product but does the consumer realize this :



The above three statement provide the organic movement with a challenge. There is little price differentiation between a "natural" product and a "regular" product yet the consumer perceives the "natural" product to be "better". There is a major price differential between "organic" and "natural" yet the consumer cannot perceive a difference. Once solution would be a successful lobby on behalf of the organic

movement to have the term "natural" banned as an product descriptor". Many respondents indicated that their was considerable confusion in the marketplace concerning the term natural. Many reported that the term was meaningless but was a great marketing tool. They also reported that their was a need for a standard definition of organic. As to the future of the term "Natural":

The term "Natural" currently used as an advertising descriptor will be banned by:

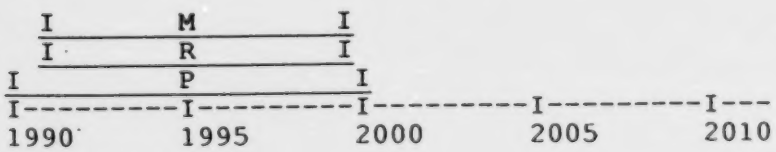


There was considerable disagreement amongst respondents as to when this event would happen. Producers clearly want to see this term banned but manufacturers and retailers are somewhat realistic in considering this term to be here for the long-term. While many would like to see this ban take effect it is unlikely to occur. Many large food processors are using the term "natural" and it has provided them with an attractive market segment. The word "Natural" can be used to differentiate a product without commanding a premium price and it is unlikely that the term "natural" will be dropped while organic maintains such a price advantage.

However, while many of the food processors did not expect to see the term "Natural" banned they expected and were supportive of a stricter definition of the term.

The further popularity of the term "natural" can be seen:

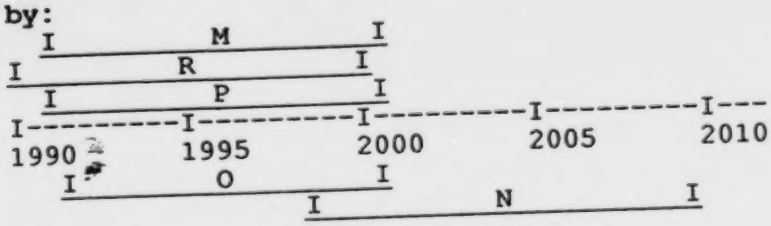
Fast food outlets will start to promote "Natural" ingredients by:



3.6 When will organic foods arrive ?

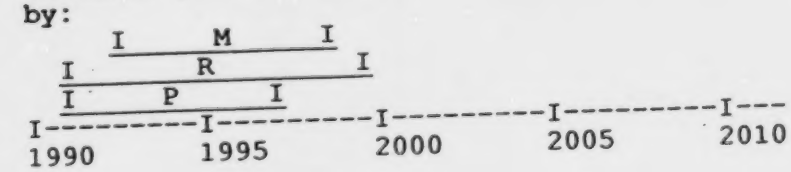
But the growth in popularity of "organic" foods can be seen from the following statements which suggest that supermarkets and food processors will introduce organic foods in the near future as a means of satisfying demand in a small but growing sector of the market.

Supermarkets will demand organically produced foods by:



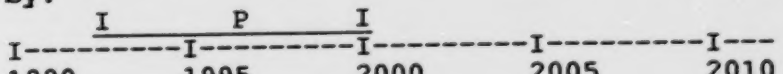
The above results require some commentary. Producers, retailers and processors indicate that the organic foods will appear in the supermarket prior to the turn of the century. Those not involved with organic produce are somewhat more pessimistic in their opinion of supermarket demand for organic foods, indicating that it will not be until the turn of the century before this occurs.

Food manufacturers will introduce organic foods to their product line by:

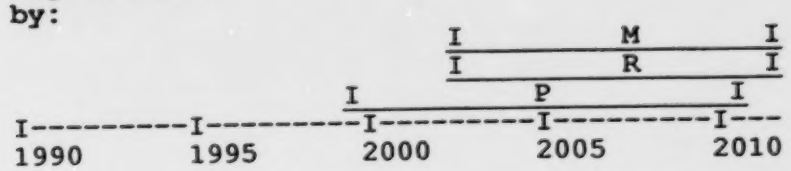


Both regional and national food processors are currently in the process of introducing organic foods into their product range and the success of these products will determine the future of this market.

Growth in the demand for organic foods will stimulate the growth of small regional food processors by:

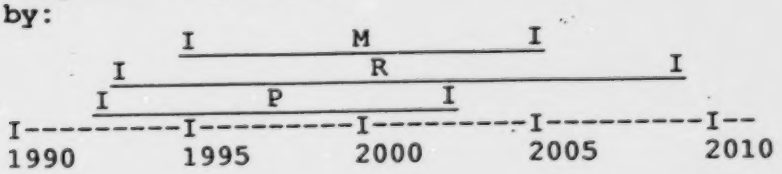


Food manufacturers will move totally to organic ingredients by:



Organic foods may form a segment of the market but they will never become the sole source of supply for the food processors. Organic foods will appeal to a segment of the population only.

Fast food outlets will start to promote "Organic" ingredients by:



It would appear that the organic movement has come out of the health food store and into the supermarket:

	Strongly Agree	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
In the next 5 years the availability of organic produce will be limited to health food stores	1	2	3	4 R P M	5

But the slow growth in the market is confirmed with the following statement:

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Organic produce only appeals to a small group of consumers	1	2 R P M	3	4	5

While the group may be small both retailers and producers are of the opinion that they are loyal and will be committed to organic in the long-term:

In Summary

The above argument has concentrated on the processor, retail and producer perceptions of consumer demand. On the positive side the consumer appears to be concerned with a healthy diet, a factor which will become increasingly important as the population ages. The consumers is also thought to be concerned with the use of chemicals both in food production and processing. With the trend towards the healthy life style respondents expect to see both major food manufacturers and regional food manufacturers introduce organic produce into their product range over the next few years.

Food manufacturers have already experienced significant segment growth with the "natural" product and will use the organic product to further develop this market. Unfortunately the consumer does not perceive any difference in the terms organic and natural and until this difference can be established and justified the consumer may not accept the premium price that is being charged for organic produce.

Growth in the market is likely to remain slow until the turn of the century when the rate of growth may increase dramatically. Since producers will convert to organic farming methods slowly the premium price may be maintained until the turn of the century at which point it is likely to disappear as volume increases.

The above section has considered the impact that the consumer has on the market but their are also constraints which will affect the producer and could lead to an increase in growth in the organic movement:

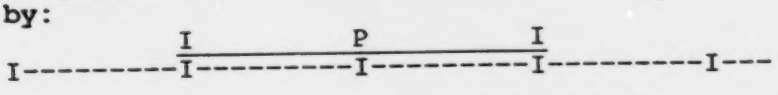
3.7 Anticipated changes in farming practices.

Fertilizers to increase the yield from the land and chemical sprays to control weeds and other pests. This has been the traditional approach to agriculture. The organic movement is promoting agriculture without chemicals. Those producers who have switched have done so because of their concern for the environment and for their own safety. Consumers are also becoming increasingly aware of the environment and the manner in which "we" treat it.

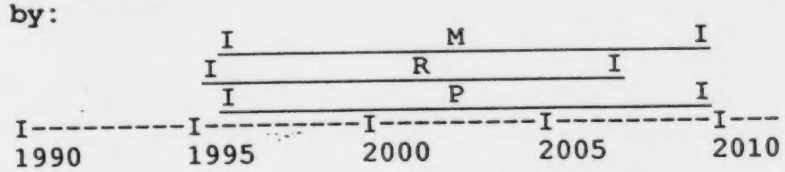
In the United States and in Europe legislation has been passed restricting the use of chemicals in agriculture. In Canada this has not occurred but it might:

From the Producer Forecast

There will be drastic reductions in the use of chemicals and fertilizers in the production of grains grown on the prairies by:

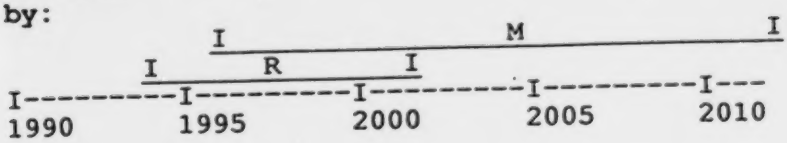


Government regulations severely limiting the use of chemicals and fertilizers will be introduced by:



Producers feel that their will be a reduction of chemicals in agriculture by the turn of the century but that the reduction will not be from government legislation. Legislation may appear but not for a long time. However, retailers were of the opinion that the consumer may prove to be a major influencer in the reduction of chemicals in agriculture:

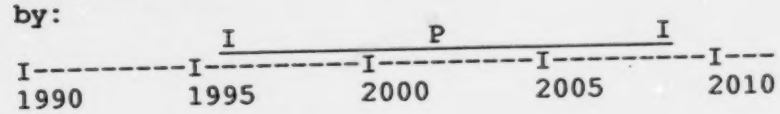
Consumer pressure will result in drastic reductions in the use of chemicals and fertilizers in the production of food by:



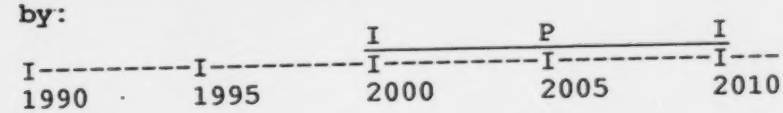
b) New species of grain

Other factors that could influence the production of grain with less fertilizer would be new species of grain and other genetic engineering techniques:

New species of grains that require no fertilizers will be introduced into the Prairies by:



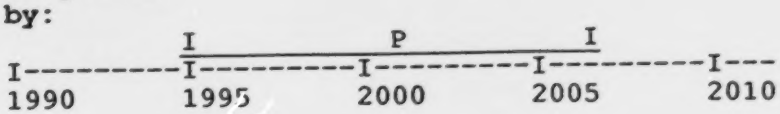
Genetic engineering techniques will replace the need for fertilizers by:



c) The mixed farming concept

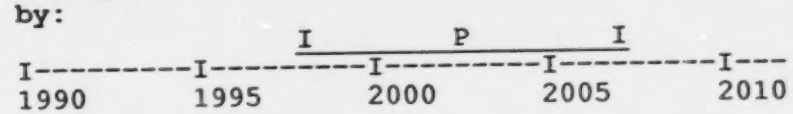
A third factor which could influence the organic movement on the Prairies is the price of grain. Currently at is lowest and unless their is agreement at the GATT in December 1990, likely to remain at this low level while Europe and the USA continue their grain war. Even if their is agreement on the level of subsidy it is likely to be some time before the price of grain returns to an acceptable level:

There will be a healthy recovery in the price of grains by:



In recent years Prairie producers have started to diversify their operation by moving into non-board grains. These grains have offered the producer a better price than traditional Wheat. However as the volume of these grains (lentils) increases so the price decreases on the international market. Another option is to diversify into organic grains. For an organic farm to be effective a mixed farming operation is required and:

Prairie producers will reduce their dependence grain by returning to a mixed farming concept by:



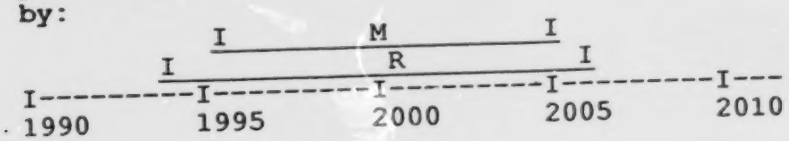
In Summary:
The producer does not consider legislation to be threat to the use of chemicals and fertilizers in agricultural production. But the consumer may influence the amount of chemicals that the producer uses. The consumer pressure is likely to be indirect being applied via the food processor who will want to use this "chemical free" message in the promotion of food.

Genetic engineering may assist in the reduction in the amount of fertilizer required but no immediate changes are likely.

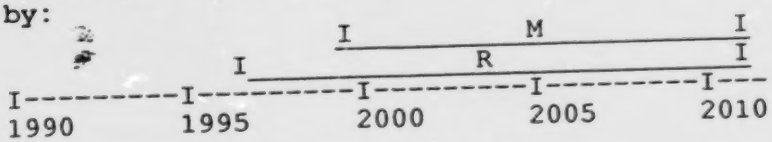
However the low price of Wheat may well force Prairie producers to consider alternate crops and the organic approach may attract a number of producers.

3.8 Issues relating to food preservatives
Food preservatives were seen as a consumer concern and the respondents offered the following opinions on food processing:

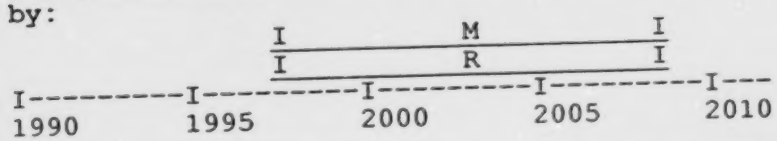
New packaging techniques will increase the shelf life of foods eliminating the need for artificial preservatives by:



Frozen foods will become the consumers first preference eliminating the need for canned produce by:



New packaging technology will eliminate the need for preservatives by:



Retailers and manufacturers were of the opinion that food preservatives will be with us into the next century and new technologies are not likely to be available until well into the next century.

4.0 Why the Move to Organic

4.1 Producers rational for developing organic.

Producers were asked to select one reason for the adoption of organic farming practices. The most predominant reason was, their own concern regarding the use of agricultural chemicals in agricultural production.

Your own concern regarding the use of chemicals in agricultural production...33%

Concern for the environment .. 29%

Concern for your own safety or health problems associated with agricultural chemicals... 27%

Organic farming would provide a profitable income... 9%

Read about consumer demand for organic foods...2%

Results from Saskatchewan producers

Concern for your own safety or health problems associated with agricultural chemicals... 33%

Your own concern regarding the use of chemicals in agricultural production...30%

Concern for the environment .. 25%

Organic farming would provide a profitable income... 10%

Read about consumer demand for organic foods...2%

It is interesting to note that Saskatchewan producers were most concerned with their own safety, as opposed to the general use of chemicals in agriculture. This is probably explained by the fact that grain producers rely heavily on the use of chemicals, some of which are considered to be toxic if not handled correctly.

4.2 Retailers rational for organic.

The major reason why organic foods were added to the product range.

read about consumer demand for chemically free foods 10%

identified a market demand for organic produce 19%

existing customers requested organic produce 29%

profit margins associated with organic produce were higher 0%

ability to increase customer base by offering organic produce 13%

purpose of retail store is to promote health foods 29%

The above results indicate that the reasons for the introduction of organic foods are related to the purpose of the store and that existing customers are requesting organic produce.

The responding supermarkets did not state that the purpose of their store was to promote health foods but the majority (80%) stated that consumer demand was the reason for the addition of organic produce to their product range. However some of the supermarkets indicated that they had introduced organic produce and were disappointed with the results.

4.3 Food processors criteria for market expansion.

All food processors were asked to rank, in order of importance, the events most likely to cause future expansion of the organic market. The three most frequently mention reasons were:

An increase in supply of organic produce so that manufacturers can be assures consistent quantity and quality.....12

The premium price must be eliminated before any significant market expansion occurs..... 10

The potential market will increase as environmentalists and the popular press make the consumer more aware of the potential dangers associated with the use of chemicals and fertilizers in food production.....10

Less frequently mentioned reasons were:

Government legislation will have to reduce the use of fertilizers and chemicals in crop production.....5

The potential market will increase as consumers become more health conscious and less price conscious...6

Later in the questionnaire manufacturers indicated that supply was hindering market expansion more than price and this result is supported with the above results. The premium price is seen as a restricting influence on market growth but many of the national food processors indicated that even at current price premiums their is a sizable target market. If the price is reduced then the market will expand.

The impact of government legislation received the fewest responses since most participants admitted that this would cause a market expansion but it was unlikely to occur.

In summary, a limited number of producers are turning to organic production techniques because of their concern for the environment or because of a concern for their own health. As the Western World becomes more aware of the environment it is possible that more producers will turn to organic production techniques. This will probably be a long term slow growth trend. Two other factors may contribute to market expansion. With low grain prices more grain producers may be considering organic crops since the price is more attractive. To date there has not been a profit motive for entering the market. Also consumer demand may increase. Retailers suggest that some consumers are seeking organic foods but experience in the organic market with fresh foods has been disappointing. A number of food processors indicate that today's market is small but their market research suggests that their is demand at a premium price. Provided this demand materializes then increased awarness may well increase the size of the market. Otherwise the size of the market will only increase as the premium price is eliminated.

5.0 The Size of the Organic Market

5.1 Documented growth of the Organic Market.

By 1988 organic sales at the farmgate were estimated by Cook to have reached about $200 million (4). Market Data Enterprises (2) suggest that there is a significant additional volume of organic food which enters the food supply through traditional channels. The Market Data Study also quotes one industry source who suggests that half of the organic produce is sold at the farmgate with the remainder being sold to retailers or processors. Retailers are thought to mark-up the organic produce by a factor of two and processors by a factor of four. Using these figures the U.S. organic market is calculated to be worth between $1.2 and $1.6 billion which represents between 1% and 3% of the U.S. food industry.

The Market Data Survey predicts that by 1992 the organic market will be a "mainstream" market, with the supermarket becoming a significant distribution channel. By 1995 organic sales are predicted to reach $4 billion, with the supermarket being the prime distribution channel. However, this forecast may be optimistic.

The Market Data Study suggests that the West Coast (California, Washington and Oregon) represent about $170 million of the farm gate sales. Cook's study estimates that the 1300 growers in California (585 are certified), produce an estimated $100 - $110 million in farmgate sales. According to Cook, the next largest producing State is Washington with $15 million in farmgate sales and 145 certified organic growers. Clearly these is some disagreement with the statistics produced by the two agencies, but they both agree that the total market is worth $200 million at the farmgate.

The New Jersey Study (3) estimates their market to be worth between $1 and $3 million at wholesale prices in 1988. This study found that 90% of the organic produce was imported from California with the remaining 10% being produced in State. However, this study suggests that the market is about to expand since a number of supermarkets indicated that they were about to enter the organic market.

In February 1989 significant media coverage was given to pesticide residue on Apples - the Alar incident. A February 26th, 1989 "60 Minutes" television report highlighted the use of pesticides on fruit crops and suggested that the U.S. apple crop may be contaminated with a pesticide known as

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2 Market Data Enterprises, The U.S. Organic Farming and Produce Market, New York 1990

3 op cit 16

Alar. The impact of the report was further reinforced when many grocers removed apples from their shelves for fear of liability suits. This media coverage increased public awareness of food safety and may have contributed to an upward bias in survey results collected during 1989.

The New Jersey study was conducted in March 1989, following the Alar incident, at which time supermarkets were considering a number of approaches to marketing fresh foods. At this time a number of supermarkets entered the organic market but a recent study by Cook (4) suggests that " numerous chains have eliminated their organic sections or reduced the number of stores handling organics due to weak sales." These stores reported that organic produce was generally unprofitable because of low margins, low turnover and high shrinkage.

5.2 Documented description of producers.

This portion of the discussion is based on Cook's (5) 1988 study of California producers. While the number of organic producers has grown from 273, in 1983 to just over 800 by 1987, this still only represents about 1% of the total California Agricultural producers. Most of these producers are small with the average farm size of the respondents (organic producers) being 58 acres compared to an average farm size of 390 acres. Cook estimated the total organic acreage at 30,000 acres compared to a total production acreage in California of 7.8 million acres.

Her study indicated that some large producers were entering the organic industry. The eight largest respondents had sales in excess of $1.8 million while the remainder of the sample had average sales of $25,000.

Fruit is the most significant organic crop produced representing 61% of the acres allocated to organics, followed by vegetables with 13% and wheat represents 5% of the organic acreage (or 534 acres).

Small producers are selling direct to the consumer or direct to a retailer. Larger producers are more likely to sell to a wholesaler or direct to a producer. This 1988 study suggested that more supermarkets were interested in entering the market to test consumer demand. The 1990 study indicates that these test markets were not particularly successful with the organic section either being reduced or closed in a number of supermarkets.

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4 Cook R Marketing Food Safety: A double edged Sword, University of California at Davis, March 1990

5 Cook R, Marketing Organic Commodities in California: Structure and Obstacles to Expansion, University of California at Davis, July 1988

The information presented indicates that the largest organic market in the United States is dominated by a large number of small producers, who tend to experience high labour costs and sell only small quantities of produce. For the market to expand supermarkets and food processors must enter the distribution channel. These channels require large volumes of produce, consistency of supply and quality produce.

In the New Jersey study experienced handlers of organic foods were asked to indicate the major problems encountered in the selling of organic foods. When asked to select only one problem " lack of supply" was quoted by 40% of the respondents and "Too expensive" by 40%. Of those interested in selling organic produce (including supermarkets) the following problems were identified:

Not enough volume is grown	52%
Not enough grown locally	46%
Not enough variety	46%
Lacks distribution	45%
Poor appearance	45%
Quality inconsistent	45%

During 1988, it appeared that the market for organic produce was going to increase dramatically. In part this expectation may have been generated by the media coverage given to the Alar incident. Today, the market for organic produce is consistent at about 1% of the U.S. food market. If this market is to increase in size then both the supermarkets and food processors must become involved in the distribution of organic produce. For these two outlets to enter the market there must be sufficient volume. Large growers will enter the market when they identify a significant demand and current research results suggest that the premium price is restricting potential market growth.

Consumers are concerned with the use of chemicals in the food production process but will the consumer pay the premium for safer food? The demand for organic foods may well increase if the price decreases. However, this may prove a problem to producers who currently are faced with increased production costs, particularly labour. (This may be due to the small operator not being able to take advantage of automation). This paper will show that it is unlikely that the "average" consumer will pay significant price premiums for organics on a regular basis. Thus for the market to grow the price must fall or the use of fertilizers and pesticides must be banned. This latter alternative is a viable option and has been the reason for the faster development of low input sustainable agriculture in Europe.

5.3 Documented description of producers.

A FLEDGLING MARKET - WILL IT SURVIVE ?
THE FUTURE OF THE ORGANIC MARKET.

The Environmental movement gained strength at the end of the 80's and environmental concerns appear to be the issue of the 1990's. Canada, and N. America in general, lag behind Europe where many companies have embarked on an "environmental revolution". *"For many companies, especially in Britain, their first introduction has come through a shift in their consumer's tastes.... Between November 1988 and May 1989 a MORI poll found that the proportion of its respondents who said they had chosen a product because of its environmental friendliness shot from 19% to 42%.* (1) This paper examines the market for organic foods in N.America with particular emphasis placed on the Canadian market.

Methodology.

The survey was conducted between May and December 1990 and involved a mail survey to producers of organic foods, retailers and distributors of meats, fresh fruits and vegetables. National and Saskatchewan food processors were interviewed by telephone. A total of 110 producers , 32 retailers and 23 food processors responded to the survey.

While the sample of producers must be considered bias since all of the producers were involved in organic farming, the retailers and food processors were selected to ensure that the major Canadian players were involved in the survey.

The sample cannot be considered to be statistically accurate since a convenience sample was used for the selection of organic producers. However the results of the survey do provide the reader with an indication of how the market for organic foods is growing and the forecasting system provides the best available information on how the market for organic foods will develop.

The results to this survey must be considered exploratory in that they provide an indication of where the industry is headed but the method of sampling prevents presentation of the results with statistical accuracy. This survey does represent the views of the major retailers and food processors and thus provides an assessment of where the industry is headed.

Historic Development

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1 The Economist. Cleaning Up. A survey of Industry and the Environment. September 8 1990.

By 1988 organic sales at the farmgate were estimated (4) to have reached about $200 million . A second study (2) suggested that there is a significant additional volume of organic food which enters the food supply through non-traditional channels. Using this information the U.S. organic market has been calculated to be worth between $1.2 and $1.6 billion which represents between 1% and 3% of the U.S. food industry.

Some market studies have predicted a rapid growth in the market for organic foods. The Market Data Survey predicts that by 1992 the organic market will be a "mainstream" market, with the supermarket becoming a significant distribution channel. By 1995 organic sales are predicted to reach $4 billion, with the supermarket being the prime distribution channel. However, this forecast may be optimistic.

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In February 1989 significant media coverage was given to pesticide residue on Apples - the Alar incident. A February 26th, 1989 "60 Minutes" television report highlighted the use of pesticides on fruit crops and suggested that the U.S. apple crop may be contaminated with a pesticide known as Alar. The impact of the report was further reinforced when many grocers removed apples from their shelves for fear of liability suits. This media coverage increased public awareness of food safety and may have contributed to an upward bias in survey results collected during 1989.

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Initial forecasts were optimistic, and more recent forecasts have been pessimistic. In the Fall of 1990 a Canadian study

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2 Market Data Enterprises. The U.S. Organic Farming and Produce Market. New York 1990

3 Food Policy Research University of Bradford

4 Cook R Marketing Food Safety: A double edged Sword. University of California at Davis. March 1990

was undertaken determine a forecast of market growth in Canada. Producers of organic crops, retailers and food processors were contacted. The results are based on a single round of the delphi study.

Expectations for the Canadian Organic Market

Is organic production a fad ?

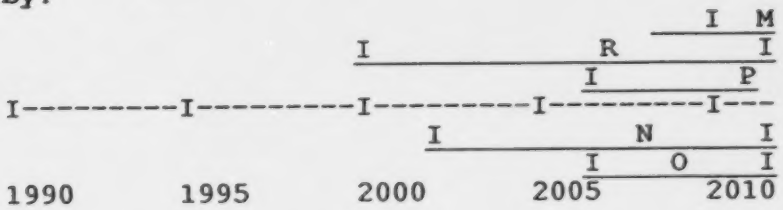
The forecasting portion of the survey asked respondents to provide their best estimate of when an event might occur.

The 'P' represents the average of all Producers
'R' Retailers
'M' Manufacturers
'N' Non organic group
'O' Organic

and the distance to the 'I' shows the variation in the responses.

The majority of the respondents indicated that the organic movement would never disappear.

Organic produce is a fad and will disappear by:



While it is not surprising that organic producers expect organic farming to be here for the long-term, retailers and processors also indicated that organic produce is not a fad but is a concept which is here to stay.

Expected growth in the market.

Currently organic produce represents about 3% of the total market and both retailers and producers expect organic foods to represent 25% of the market by 2005.

The table below shows the difference in the expected market growth as forecast by producers and retailers. Producers anticipate a faster adoption of organic foods in the market while retailers perceive that the market will be faced with slow growth until the turn of the century and then growth will accelerate.

While there is considerable similarity in the views of both retailers and manufacturers in the forecast of the growth in the market retailers are not as optimistic as the producers:

Organic will represent:	Producer	Retailer	Processor Organic	Processor Non organic
10%	1995	1998	1998	2000
15%	1998	2003	2003	2005
20%	2000	2005	2009	2009
25%	2005	2008	2009	2010

When the predictions made by the retailers (excluding health food stores), wholesalers and food processors are arranged by those who are currently involved with organic produce and those who are not, the following is obtained:

Percent of food market	No Organic	Some Organic
10%	2002	1997
15%	2005	2003
20%	2007	2007
25%	2010	2010

Those who are involved with the marketing of organic foods are more optimistic towards initial growth in the market. Following the turn of the century both groups predict similar growth rates.

It is reasonable to support more pessimistic market forecast which suggests low growth to the turn of the century. This report will indicate that current Canadian volumes of organic produce are limited. New producers require a minimum of three years for certification so it is unlikely that significant increases in production could be made until 1995 at the earliest. Many retailers and some food processors are concerned with the high prices that organic foods command and are of the opinion that these high prices will limit consumer demand while other food processors see the aging population and its concern for a healthy diet providing a significant market growth for organic. Given the interest of national food processors in this market it is likely that the market will grow to 10% of the total food market by 2000 and if this level is attained then the rate of growth is likely to increase as consumer awareness increases.

The market growth forecasts would suggest that the concept of organic farming is here for the long term. Producers see a fairly fast growth of organic produce while retailers and processors are more conservative in their approach to growth. Since the producers are all organic farmers we would expect a more optimistic forecast from this sector of the industry and the most likely forecast would be for a slow growth until the turn of the century followed by a more rapid increase in growth. This prediction is the more rational since the total market for organic is about 3%.

For growth to occur additional acres must be brought into production and the transition period is between three and five years. It is unlikely that conventional producers will convert all their land from organic to traditional at one time. The switch will be gradual thus the growth for organic will be restricted until the end of the Century. By 2005 both retailers and producers are confident that the organic produce will be approaching one quarter of the produce grown in N America.

The above "forecast" would suggest that the organic market is here to stay. While the optimistic forecasts of the late 1980's may not be realized significant growth will be realized once the national food processors enter this market. It is likely that growth will be driven by market demand. Initial demand being generated by food processors positioning an organic product utilizing a sophisticated marketing program based on " a healthy lifestyle". Secondary demand will be generated by the consumer who feels that too many chemicals are used in food production and will start to demand a reduction in the use of chemicals in the food chain.

GROWTH IN THE ORGANIC FOOD MARKET. FACTORS CONTRIBUTING TO MARKET DEVELOPMENT

A 1990 survey (1) found that most consumers rated environmental information and issues related to food quality low in trustworthiness. Also consumers were skeptical towards the sincerity of the food industry to create environmentally friendly products. This paper reports on research conducted during 1990 which obtained the views of food processors, retailers, distributors and producers of organic products concerning the future growth of this market.

All respondents were of the opinion that the organic market was unlikely to be a fad and that this market segment would remain a part of the Canadian food market. Currently 3% of the N. American food market is attributed to organic foods (30). While supermarkets tended to be skeptical towards the future growth in the market, many of the national food manufacturers indicated that the organic food market was a viable market segment which could attain a 10% market share by the turn of the century. This paper will examine the factors which have been identified as contributing to this growth.

An Environmental Perspective

Exploitation of arable land - voluntary or government legislation of chemical and fertilizer use

The total amount of arable land, available in the world, for crop production is fixed. During the 1970's, as prices and demand for food, particularly wheat, remained high additional acres were brought into production. As supplies of highly productive land diminished marginal land, requiring irrigation, was brought into production. Almost all the land capable of being irrigated is now in use. In recent years, the proportion of growth, in global agricultural production, derived from the expansion of cultivated areas, has declined indicating that the quality of the land, being brought into production, is declining.

There is concern, amongst environmentalists and consumers, that we have over exploited some of the world's land base. In order to turn marginal land into productive land chemicals have been added and the water table has been lowered to provide irrigation. These chemicals have entered the water table polluting some areas. In the fragile regions there is concern that we burn trees to expose land. This

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1 Watts, T.A., Liefeld, J.P., Roth., V.J. Consumer Attitudes Regarding Environmental Issues, ASAC, 1990.

land may be incapable of producing crops without significant inputs of chemicals which in turn leads to the degradation of the environment.(6)

Many consumers are becoming increasingly concerned with the use of chemicals in crop production. Can some of these fruit sprays remain on the fruit until the time it is purchased ? What impact will these chemicals have on our health ? The Alar incident of 1989, reported on the program "60 Minutes", demonstrated the consumer's concern with chemicals in the food production process.

U.S. scientists have identified 40 agricultural chemicals in the ground water supply and regulatory and technological solutions are being contemplated. In the United States it is expected that the new farm bill will contain provisions relating to the use of chemicals in food production, improvements to the regulations of insecticides and fungicides, improved methods of food inspection and groundwater contamination. (9)

The Watts study (20) conducted in 1990 indicated that 51% of respondents stated that they thought that the quality of food was becoming unsafe. The respondents also tended to pick the "not sincere" side of four point scale in response to " *how sincere are the efforts being made by the food industry to promote "environmentally friendly" products*". Discussions with a number of major food processors would suggest that the industry is aware of this concern. Food manufacturers, who tend to be the main users of food preservatives and colouring, believe that consumers are concerned with the use of chemicals in colouring and preservatives. A number of the national food processors indicated that they have moved away from artificial preservatives to naturally occurring preservatives and that salt levels have been reduced.

Will these environmental concerns significantly reduce the use of chemicals in the agricultural production process ? Many respondents to the survey did not see an increase in government legislation banning the use of chemicals until the turn of the century. Many of the food processors were of the opinion that the Canadian market is more highly regulated than its US counterpart and thus increased legislation may not be required. However retailers and food

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30 Market Data Enterprises, The U.S. Organic Farming and Produce Market, New York 1990

6 Why the current concern about food supply. Kelly White

UDSA Economics Research Service July 14 1989.

5 Agricultural Policy - food and environmental safety becoming more important. UDSA Economic Research Service June 1989 and President Bush's Food Safety Plan UDSA Office of Governmental and Public Affairs October 1989.

20 Watts, T. A., Liefield, J. P., Roth, V.J., Consumer Attitudes Regarging Environmental Issues, ASAC 1990.

processors thought that consumer pressure would result in a reduction in the use of chemicals and fertilizers before the turn of the century. Food processors were not consistent in their estimate of this event. Some thought that changing consumer attitudes would cause a reduction prior to the turn of the century, while others did not see this event occurring at all.

Environmental concerns may limit the use of chemicals in the agricultural industry and this would lead to improved farming systems and agroecosystems in the future. In both Europe and the USA considerable research is being conducted into low input sustainable agriculture, particularly in areas where ground water has been contaminated by agricultural chemicals. Low input sustainable agriculture can mean an improved efficiency in the agricultural operation by the use of techniques ranging from minimum tillage to the more sophisticated approach involving three to seven year crop rotation and recycling of farm waste. (11)

Organic producers thought that new species of grain or genetically altered grains, requiring less fertilizer, could be introduced by the turn of the Century. Recent events at the GATT have not been financially encouraging for the prairie farmer and many producers are considering alternate crops to off-set the low price of wheat. Participants in the study did not foresee a return to healthy grain prices before the turn of the century. By this time the majority of the producers thought that their would be a return to the mixed farming concept which used to be practiced on the prairies.

One criticism of organic farming has been the potential impact on yields; no chemicals then lower yields. Initial studies into the impact of organic farming are discussed by Hall (8) who indicates that the initial studies on the elimination of fertilizers indicated that yields were significantly reduced. However he also suggests that the methodology used in these studies was circa 1940's and not applicable to the environment of the 1980's. He conducted a study in 1983 for cotton and citrus farmers which suggested that the impact of chemicals on yield is less significant than first thought. Organic producers in the Canadian study indicated that they experienced an 18% reduction in input costs and a 6% reduction in yields.

This portion of the paper suggests that environmental concerns may dictate reductions in the use of chemicals in

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11 Ecological Agricultural Projects, An introduction to sustainable Agriculture, Agriscience

8 Hall D C, Baker B P, Franco J, Jolly D, Organic Food and Sustainable Agriculture, Contemporary Policy Issues

food production. These chemical reductions may be voluntary or they may be legislated. The results from the Canadian survey suggest that legislation will not impact the Canadian market in the near future but consumer pressure may cause a voluntary reduction in the use of chemicals. These results suggest that if this market is to grow, growth will be initiated by the consumer and not from legislative pressure. The consumer may be a food processor, a retailer or the end user.

Such a conclusion is not surprising and consumer pressure has been identified as the major cause for the rise in popularity of environmental issues in Europe. "*For companies in Britain, the consumer has been the main force driving them to greenery. Many have found it a hair-raising experience. Shoppers have shown that they can turn their back on a product considered environmentally unsound in a bewilderingly short time.* "(31)

The role of the consumer:
What factors are important in the decision to purchase food
In the developed world, it has become increasingly difficult to identify and predict the criteria, which are used by consumers, in their decision to purchase food. Researchers must take into account the environment in which the consumer lives, including the impact of social and demographic trends and how these variables affect the attitudes and beliefs that consumers hold. Wikstrom (12) discusses a number of major demographic trends which became apparent during the 1980's :

- an increase in the number of dual income households
- an increase in the number of single parent families
- an increase in the number of working women
- the emergence of the YUPPIE market
- smaller families

While these demographic trends have impacted the consumers eating habits, these trends cannot be treated in isolation from the social trends of the 1980's:
- better educated consumers
- concerns with a healthy life style
- environmental concerns
- amount of "quality time"

Wikstrom's article discusses how these changes have influenced the consumer's attitude towards the kind of food they require, their eating habits and their nutritional requirements and priorities. His paper reports on an

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31 The Economist, Spend a pound and save the planet, A Survey of Industry and the Environment, September 1990.

12 Food consumption and consumer behavior in the future. Solveig Wikstrom in xxxxxxxx Edited by E Kynak.

American study (13) which indicated a changing pattern in the type of foods that were being consumed, with an increase in the consumption of chicken, fruits, salads and cheese but a reduction in cakes, junk foods, butter, bread and (red) meat.

Wikstrom's study focused on four central quality aspects of food:
- taste and food as a pleasure
- convenience
- nutrition and the demand for a safe food
- food prices and food costs.

While the research indicated that these four variables interact, the price of food was found to be of the least concern to consumers. In recent years, there has been a move towards an improvement in the quality of food but the overriding criteria for the 1990's is expected to focus on the nutritional and safety aspects of food. Wilkstrom indicates that in both Sweden and the USA one out of three consumers expressed concerns regarding the safety of food but only one in twenty businessmen considered that safety was a problem for consumers!

The relationship between price and nutrition in food selection

The previous section indicated that the consumer is concerned with the nutritional aspects of their diet. This portion of the paper will attempt to used the studies to determine whether the consumer is more price conscious or more health conscious.

Many of the studies relating to the demand for organic foods indicate that the consumer is willing to pay a premium of between 25% and 30% for organically produced foods. In a Canadian Study (17) conducted in 1988, 53% of the respondents indicated that they would be prepared to pay a 25% premium for organic produce. A 1989 study, conducted in New Jersey(18), suggested that consumers were prepared to pay a premium of 30% for organic produce.

However, a more recent study (19) identified 57% of the respondents stating that high price was the reason given by a number of consumers for not continuing with the purchase

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13 Woman's Day Family Food Study (1978) Nutrition, a study of consumer's attitudes and behaviors towards eating at home and out of home. Conducted by Yankelovich, Skelly and White, Inc.

17 Baseline market Research Ltd, Final Report Organic Agriculture Study, 1988 Ag Canada Food Development Division

18 Morgan J, Marketing Organic Produce in New Jersey: Obstacles and Opportunities, Stony Brook Millstone Watershead Assn, 1989

19 Jolly D, Schutz H, Johal J, Knauf K, Marketing Organic Foods in California Opportunities and Constraints, University of California, Davis 1989

of organic foods. Also 41% of those who had never purchased organic foods indicated that price was the prime reason for not purchasing. In a 1990 study (20) 63% of respondents indicated that price was a very important factor in the purchasing decision.

If price is an important determinant in the decision to purchase then the market for organic produce may expand very slowly and not meet the 10% projections which are currently being forecast for the organic market.

All of the respondents to the Canadian study were of the opinion that the organic food market would retain its premium price. Currently organic produce is commanding a price premium and retailers feel that this premium, and not a lack of supply is restricting growth.

While retailers and manufacturers report that the high price associated with organic foods is one of the main reasons for the slow market growth, none of these groups is predicting an end to the premium price before the turn of the century.

These results suggest that organic products will hold their premium until the turn of the century before the premium is eroded. Again, this result can be linked to the availability argument. Until additional acres are brought into production supply will be limited. For land to be certified capable of supporting organic crops it must be free of any "artificial" additivities - chemicals. The transition period for land which has been fertilized is approximately 3 years. Even if a producer were to move towards organic crops today , the first harvest would not be available until 1995. Thus organic produce should be able to maintain a price advantage for a few more years. However the retailers would prefer to see this premium dropped:

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Expansion of the organic market is hindered by supply limitation more than by the high retail price	1	2	3 R P M	4	5

20 Packers Study

The results from the above study would indicate that the consumer is concerned with obtaining a nutritionally balanced diet but is more concerned with keeping the family well fed within the confines of the family budget.

The Canadian study supports these findings with all respondents agreeing with the statement:

> **Consumers are more health conscious today than they were 5 years ago** (1.6 on a 5 point scale where Agree=1)

The trend towards a healthy life style is likely to continue as the baby boom approaches retirement, but in the short term, the consumer is faced with a recession and a tightening of the family budget. The questionnaire was completed prior to the current recession and at that time all respondents disagreed with the statement:

> **The majority of consumers place the requirement for a healthy diet above the cost of the produce** (3.4)

but agreed with the statement:

The average consumer, when shopping for food in the supermarket, is primarily motivated by price. (2.0)

The average consumer, when shopping for food in the supermarket, is motivated more by quality than the price of a product.

1 2 3 4 5

R

P

M

The bottom line - all respondents consider the consumer to be motivated by price and appearance. Quality and "health aspects" are important but their level of importance is secondary to price. Only the retailers, a sample which included health food stores, thought that the consumer could be motivated more by quality than price. When the opinions of the supermarkets, distributors and food processors not involved with organic produce were examined they considered the consumer to be motivated by price and not by quality. Even those currently participating in the organic ma ket did not state that the consumer was more concerned with quality than price.

The consumer is concerned with a healthy diet but price is still the motivating factor in the purchase decision which would suggest that while the price of organic produce remains high demand will be limited.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Expansion of the organic market is hindered by the high retail price rather than supply limitations	1	2	3 R P M	4	5

Retailers felt that the expansion of the organic market was being hindered by the high price. Producers felt that market growth was being restricted by supply. Manufacturers tended to be neutral on these two statements with marginally more suggesting that price is the limiting factor. Part of the reason for the neutrality was due to those manufacturers whose research had indicated a consumer demand, indicating that supply was the constraining factor, while those who thought their was little demand for their products in an organic form indicated price as the constraining factor.

Food Quality

The 1978 study (22) which examined consumers' attitudes and behaviour towards eating at home and out of the home indicated that 77% of the consumers were more interested in nutrition than they were a few years ago. The major reason for the increased interest was attributed to an increased interest in physical fitness as well as articles on nutrition. In the same study, 53% of the families indicated that they eat more nutritiously than a few years ago and 63% considered themselves fairly well informed on nutritional issues. Despite the level of knowledge of these respondents, 44% indicated that someone in the family had weight problems, suggesting, perhaps, that our life style does not allow us to consume a "nutritionally balanced diet".

These respondents were provided with three criteria which could be used to influence the families purchase of food; 41% of the respondents were concerned with balancing the budget, 35% with watching their weight and 17% with recommended nutrients. Favorite leisure time activities included watching TV and going to the movies - both of which are associated with junk food and one in ten indicated visiting a fast food restaurant.

The women in the sample were asked what were the major barriers to good nutrition. "Pleasing the family" was suggested by 72% and the budget was also identified as a reason by 59% of the respondents.

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22 op cit 11

All respondents marginally agree that the consumer is concerned with the use of chemicals in food processing. However, many food processors suggested that the consumer may state that they are concerned but this concern is not being reflected at the point of sale. However food manufacturers, who tend to be the main users of food preservatives and colouring, indicate that consumers are concerned with the use of chemicals in colouring and preservatives. A number of the national food processors indicated that they have moved away from artificial preservatives to naturally occurring preservatives and that salt levels have been reduced.

Adding to consumer confusion has been the use of the term "Natural" which is despised by organic producers and a number of food processors. The term has been introduced to appeal to the health conscious and nutritional market segments.(28). The A C Neilson organization recently examined this trend (29) and found that "the word "natural", may or may not be helpful depending on the consumers perception of what the term means. The results suggested that the term *"natural" could be used to mean anything you wanted it to mean. "Its use on a label certainly does not seem to indicate the absence or presence of salt, sugar, caffeine, cholesterol, calories, chemical additives or preservatives, nor can it be used as assurance that the food item is nutritionally better for you".*

The Canadian survey indicated that the Canadian consumer is very confused. A Natural product is not an organic product but does the consumer realize this ? Respondents to the survey did not think so since they all agreed with the following statements:

The consumer cannot differentiate between the terms organic and natural.

The average consumer, when shopping for food in the supermarket associates the term "natural" with a product which contains fewer chemicals

The average consumer, when shopping for food in the supermarket associates the term "natural" with a product which contains no chemicals

The above three statement provide the organic movement with a challenge. There is little price differentiation between a "natural" product and a "regular" product yet the consumer perceives the "natural" product to be "better". There is a major price differential between "organic" and "natural" yet

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28 ibid

29 Carlson K O, Natural Foods, presented to 14 Annual Fall Symposium of the Flavour and Extract Manufacturers Association

The Confused Consumer

In the late 1970's the Food and Drug Administration nearly banned the use of nitrite and saccharin in the United States, but its decision was overruled by Congress. Now the consumer was getting mixed signals from the many voices that speak about food safety in the United States. Foster (23) indicated that various agencies are warning the public about " *our foods being poisoned with unsafe preservatives, unnecessary additives, toxic pesticides and dangerous chemicals.*" Foster's article indicates that most of these accusations are true but the quantities of chemical that enters the food chain is so small that the impact on a human is negligible. A similar argument is made by Cook (24) who makes the point that consumers would be worse off if certain pesticides were eliminated from the food production process.

While not endorsing these arguments the more important point is that consumers are being subjected to conflicting messages; one set stating that some foods, additives or production processes are bad yet the same foods are still on the supermarket shelf.

The consumer is not a biologist, chemist or nutritionist yet the media and certain government agencies are asking the consumer to make important decisions regarding their (and their families) diet. When faced with this type of dilemma the consumer will often place their trust in a brand name or a store name. If the product is being sold in the store then it must be safe to eat, provided the date stamp is not expired. In a 1989 survey (26) 81% of the respondents indicated that they were confident that the food in the supermarket was safe.

In the current survey all respondents tended to agree with the statements:

> **The average consumer, when shopping for food in the supermarket is concerned about the chemical residues that may be present on many fresh foods.**(2.8 on a 5 point scale where 1 is agree)
>
> **The average consumer, when shopping for food in the supermarket is concerned with the use of chemicals in food colouring and preservation.** (Producers and retailers 2.9, food processors 2.2 on a five point scale where 1 is agree)

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23 Foster E M, How Safe are our Foods, Nutrition Reviews January 1982

24 Cook R, The Food Safety Controversy: Implications for the Fresh Produce Industry, Annual Agricultural Outlook Conference 1989

26 Op cit 18

the consumer cannot perceive a difference. Once solution would be a successful lobby on behalf of the organic movement to have the term "natural" banned as a product describer". Many respondents indicated that their was considerable confusion in the marketplace concerning the term natural. Many reported that the term was meaningless but was a great marketing tool. They also reported that their was a need for a standard definition of organic.

There was considerable disagreement concerning the long term future of the term "Natural".. Producers clearly wanted to see this term banned, but manufacturers and retailers were somewhat realistic in considering this term to be here for the long-term. While many would like to see this ban take effect it is unlikely to occur. Many large food processors are using the term "natural" and it has provided them with an attractive market segment. The word "Natural" can be used to differentiate a product without commanding a premium price and it is unlikely that the term "natural" will be dropped while organic maintains such a price advantage.

However, while many of the food processors did not expect to see the term "Natural" banned they expected and were supportive of a stricter definition of the term.

All of these "natural" and "lite" products have one common feature. They do not sell at a premium price, yet they promote a "healthier" life style. Also the name allows the consumer to justify an existing life style - healthy snack food.

Organic produce does command a premium price and this may be the reason that the term "organic" will not receive the same dramatic rise to popularity that "natural" and "lite" have.

Where will the growth come from ?
All of the research studies indicate that the consumer is concerned that their food is nutritional and safe. While these may be the two overriding selection criteria, price is still a dominant factor in the decision process. The consumer is not a chemist or nutritionist and may be confused by the different messages which are being sent from different government agencies. It would appear that the consumer considers food on sale in our stores to be safe.

Products which contain "natural" and "lite" in their names have been extremely successful in recent years indicating the consumers concern for a healthy lifestyle. However, many food processors did not believe that these two terms were sufficiently regulated and that consumers were being mislead by these terms. Also these products are not sold at a premium, allowing the consumer to justify their nutritional aspirations without any additional expenditure.

In most of the studies, conducted to date, into organic foods the consumer has indicated a willingness to pay a premium for organic foods. This commitment is not being reflected in the consumers shopping habits as reflected by recent surveys which indicate that consumers consider fresh organic foods to be too expensive. Also, a number of supermarkets which introduced organic produce into their stores in mid 1988 have now removed these departments due to the low level of sales. However, food processors feel that they may be able to create a market for organic products since they add more value to a product, thus making it harder for the consumer to make a direct price comparison.

Europe is said to be five to ten years ahead of N America in organic farming. Part of the added impetus for this market has been the reduction in the use of fertilizers which have polluted water tables. For environmental reasons the Europeans have adopted more readily to low input sustainable agriculture. If the use of fertilizers and pesticides were to be restricted by legislation or if a move towards low input sustainable agriculture were to occur then their would be an automatic increase in the availability of organic produce. If this were to occur then organic produce would likely lose its price advantage. This scenario has occurred in parts of Europe but the survey suggests that such a scenario would not occur in Canada in the short term. With the current consumer attitudes towards price growth may be slow until price falls.

A profile of organic producers:
This portion of the discussion is based on Cook's (5) 1988 study of California producers. While the number of organic producers has grown from 273, in 1983 to just over 800 by 1987, this still only represents about 1% of the total California Agricultural producers. Most of these producers are small with the average farm size of the respondents (organic producers) being 58 acres compared to an average farm size of 390 acres. Cook estimated the total organic acreage at 30,000 acres compared to a total production acreage in California of 7.8 million acres.

Her study indicated that some large producers were entering the organic industry. The eight largest respondents had sales in excess of $1.8 million while the remainder of the sample had average sales of $25,000.

Fruit is the most significant organic crop produced representing 61% of the acres allocated to organics, followed by vegetables with 13% and wheat represents 5% of the organic acreage (or 534 acres).

Small producers are selling direct to the consumer or direct to a retailer. Larger producers are more likely to sell to a wholesaler or direct to a producer. This 1988 study suggested that more supermarkets were interested in entering the market to test consumer demand. The 1990 study indicates that these test markets were not particularly successful with the organic section either being reduced or closed in a number of supermarkets.

The information presented indicates that the largest organic market in the United States is dominated by a large number of small producers, who tend to experience high labour costs and sell only small quantities of produce. For the market to expand supermarkets and food processors must enter the distribution channel. These channels require large volumes of produce, consistency of supply and quality produce.

In the New Jersey study experienced handlers of organic foods were asked to indicate the major problems encountered in the selling of organic foods. When asked to select only one problem " lack of supply" was quoted by 40% of the respondents and "Too expensive" by 40%. Of those interested in selling organic produce (including supermarkets) the following problems were identified:

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5 Cook R, Marketing Organic Commodities in California: Structure and Obstacles to Expansion, University of California at Davis, July 1988

Not enough volume is grown	52%
Not enough grown locally	46%
Not enough variety	46%
Lacks distribution	45%
Poor appearance	45%
Quality inconsistent	45%

During 1988, it appeared that the market for organic produce was going to increase dramatically. In part this expectation may have been generated by the media coverage given to the Alar incident. Today, the market for organic produce is consistent at about 1% of the U.S. food market. If this market is to increase in size then both the supermarkets and food processors must become involved in the distribution of organic produce. For these two outlets to enter the market there must be sufficient volume. Large growers will enter the market when they identify a significant demand and current research results suggest that the premium price is restricting potential market growth.

Consumers are concerned with the use of chemicals in the food production process but will the consumer pay the premium for safer food? The demand for organic foods may well increase if the price decreases. However, this may prove a problem to producers who currently are faced with increased production costs, particularly labour. (This may be due to the small operator not being able to take advantage of automation). This paper will show that it is unlikely that the "average" consumer will pay significant price premiums for organics on a regular basis. Thus for the market to grow the price must fall or the use of fertilizers and pesticides must be banned. This latter alternative is a viable option and has been the reason for the faster development of low input sustainable agriculture in Europe.

6.0 Production of organic crops as reported in the survey.

When was organic production started and when was the land certified ?

As the table over shows, organically produced vegetables and fruits have been available since the mid 1970's but certification did not appear to be an issue until the mid 1980's. Organically produced grains have been available since 1980 but lentils and legumes do not appear until the mid 1980's. Certification of land used for grain has occurred within the past three to four years. Organically raised livestock appears to have started with beef and dairy in the 1980's and pork and lamb have now become popular. Very few of the livestock producers were certified.

	Year	
Crop	**Started**	**Certified.**
Wheat	80	87
Barley	83	88
Oats	80	87
Durum	81	85
Oilseeds	79	89
Lentils	83	90
Legumes	84	87
Canola	82	88
Other grains (Rye, Flax)	77	86
Vegetables		
Wild rice		
Honey		
Dairy	80	
Beef	80	86
Pork	87	
Lamb	85	89
Poultry	79	91
Other livestock (Goats)		
Apples	78	87
Other fruits	79	84

Acres under organic production

The amount of land devoted to organic production is small. Respondents were asked to indicate the acres under cultivation using the following categories:

Scale	Acres	Scale	Acres
1	Under 5 acres	2	Over 5 but under 10
3	Over 10 but under 20	4	Over 20 but under 50
5	Over 50 but under 100	6	Over 100.

As the table below indicates Saskatchewan farms tend to have a greater acreage devoted to grain crops.

Crop	Average acreage Total Sample		Saskatchewan	
	Cert	Non Cert	Cert	Non Cert
Wheat	4.69(49)	4.00(16)	5.23(22)	4.78(9)
Barley	4.34(23)	3.80(16)	4.61(13)	4.20(5)
Oats	4.36(41)	3.57(14)	4.95(20)	4.00(7)
Durum	4.62(8)	5.33(3)	4.16(6)	5.00(2)
Oilseeds	4.18(11)	4.25(4)	5.17(6)	5.00(2)
Lentils	4.29(14)	4.33(3)	4.62(8)	4.50(2)
Legumes	4.52(21)	4.73(11)	5.25(12)	5.29(7)
Canola	5.00(6)	5.00(1)	5.50(4)	5.00(1)
Other grains	4.53(32)	3.93(14)	4.9(10)	5.4(5)

The numbers in parenthesis indicate the number of respondents to the question. For wheat, produced on certified land, there were 49 respondents in the total survey and 22 or 45% of the wheat producers were located in Saskatchewan.

Using this approach the table below indicates the percentage of the crops which are grown in Saskatchewan. (Given the sampling method used this calculation cannot be used as a percentage of the Canadian crop which is grown in Saskatchewan.)

Percentage of grain respondents located in Saskatchewan:

Grain	Certified	Non Certified
Wheat	45%	56%
Barley	56%	31%
Oats	49%	50%
Durum	75%	67%
Oilseeds	54%	50%
Lentils	57%	67%
Legumes	57%	64%
Canola	67%	100%
Other	31%	36%

From the original data it is also possible to categorize the respondents by size:

For Wheat produced on certified land the number of respondents indicating:

	Total sample		Saskatchewan	
	Number	%	Number	%
Over 100 acres	23	47	12	54
Between 50 and 100	10	20	8	36
Between 20 and 50	5	10	0	0
Between 10 and 20	3	6	0	0
Between 5 and 10	5	10	1	5
Under 5	3	6	1	5

Vegetable productions
In total 18 vegetable producers responded to the survey and only two of these producers were located in Saskatchewan. The average acreage of vegetable production was under 5 acres.

Livestock
A number of respondents indicated that they raised livestock using organic farming techniques. Very often these producers used their own organically grown grains to feed their livestock. As the table below indicates most of the livestock producers were not located in Saskatchewan. The above table indicates that grain production outside of Saskatchewan tends to be on a smaller scale. In many of these cases the reason for the smaller production is that the grain is being produced to feed livestock.

Livestock (Av herd size)

	Total survey		Saskatchewan	
	Cert	Non Cert	Cert	Non Cert
Dairy	25(4)	10(4)	2(1)	25(1)
Beef	38(11)	52(25)	31(3)	86(7)
Pork	215(2)	92(6)	0	101(2)
Lamb	57(4)	77(4)	0	60(1)
Poultry	130(5)	604(11)	125(4)	180(3)

6.1 Reported growth in the production of organic crops.

While the amount of land devoted to organic production is small the number of acres that have been brought into production have increased. Just under half (44%) of the respondents indicated that they had increased the acreage or number of livestock since their organic operation started.

One quarter of the Wheat producers, 28% of the Barley and 31% of the Oats producers indicated that they had increased their production since the operation started. On average each producer had added between 20 and 50 acres. One third of the Legume producers had increased production adding, on average, between 20 and 50 acres. Other grain producers had increased the size of their operation by between 10 and 20 acres.

One third of the Beef Cattle producers had increased their herd size by 50% . All other livestock operations showed average increases of less than 50%.

In Saskatchewan, 42% of the respondents indicated that they had increased the size of their operation since it had started. One third of the Wheat producers added, on average

between 50 and 100 acres, 39% of the Barley producers increased production as did 37% of Oats producers. Almost two thirds of the Legume producers indicated an increase in production since their operation started.

Summary of increases in production in organic farming and expected increases:

	Percentage Total sample Inc	Expect Inc	Saskatchewan Inc	Expect inc
Wheat	26	18	32	22
Barley	28	10	39	11
Oats	31	20	37	22
Durum	36	9	37	0
Oilseeds	40	27	25	25

	Percentage Total sample Inc	Expect Inc	Saskatchewan Inc	Expect inc
Lentils	23	6	30	10
Legumes	37	22	42	23
Canola	14	28	20	40
Other grains	26	13	47	33
Vegetables	46	38		
Dairy	25	12		
Beef	33	22	20	30
Pork	25	12		
Lamb	50	12		
Poultry	37	31		

The above table indicates that Saskatchewan is a grain producer and other organic crops play an insignificant role in organic agriculture in the province. Most of the anticipated acreage increases were in the range of 50 to 100 acres suggesting that cautious growth in the market for organic grains is expected.

Canola appears to be the crop where the largest increases are expected to take place followed by other grains (Flax and Rye) and then Legumes.

6.2 Reported growth in retailing of organic produce.

The majority of retailers (including Health Food Stores) indicated that there had been an increase in the demand for organic foods since these products had been introduced into their store.

All of the respondents indicated an average growth of between 11% and 20% for Dairy, Fruits, Meats, Specialty and Vegetables and a 21% to 50% increase in demand for Processed Products.

Supermarkets indicated a growth rate of less than 10%. This result should be expected since the Health Food Stores and

the Specialty Food Stores are catering to a specific segment of the market which is concerned with the type of product purchased and are probably not price conscious. The supermarket is appealing to a wider audience and only a percentage of this target market may be attracted to organic produce, hence a slower rate of growth.

Respondents were asked to indicate whether current supply could meet the demand being experienced by the retail outlet. Only half of the retailers indicated that demand exceeded supply and a supply increase of about 10% would be required in all areas to meet existing levels of demand. Due to the small numbers this average figure maybe misleading as the increases in supply requested ranged from zero to 50%.

6.3 Reported growth in processed organic foods. Saskatchewan Food Processors

The views reported here are taken from interviews with 13 food processors located in Saskatchewan. Five of the thirteen companies indicated that their product mix currently contained organic products and these products had been introduced in the past two or three years. The five companies represented a broad range of product groups including meats, dairy, fruits, vegetables and grains.

A meat processing company indicated they were producing a "Natural" beef products and discussions with the Head Office indicated that the company is dealing with the term "Natural" and not Organic. The term "Natural" is a meat product which is free of steroids and the definition of this term is vague and the industry is having difficulty with understanding what the term "Natural" really means. Their local representative indicated that growth in this market has been slow due in part to the high price which this product commands in the marketplace.

A second company produce their own organic grains which are retailed as "Organic" cereal grain flour. Their operation is small using only about 1,600 bushels annually. They have been in business since 1987 and report the market growth to be very slow indicating that they do not have the resources available to market their products. They will expand their product line as the market increases in size.

One of the local bakeries currently buys about $2,000 of organic grains through a broker and have been producing "Organic" bread since 1987. Again this company reports the growth in the market as very slow

From the comments made by the processors the market growth for organic products will be slow and it is not expected to increase dramatically in the next five years. Food processors who use produce as an ingredient in their production process indicate that supply is the constraining factor to market growth. These processors do not feel that the high price is a constraining factor since a high price can be used to differentiate their product. Price is seen to be the main constraining factor by those processors who are producing the fruit or vegetable in a preserved state. Yet all processors (irrespective of their involvement in organic) later indicated that they expected organic to maintain its premium price until the turn of the century. Many of the processors indicated that the consumer needs to be made aware of the benefits of organic products and most indicated that the market would expand as the consumer became more aware of the benefits associated with organic foods.

It is possible that the processors are hoping that increased consumer education will provide the consumer with a rational and justification for paying a higher price for organic products. In reality the consumer may not be convinced. Earlier in the paper the suggestion was made that fresh fruit and vegetables could not be sold at a premium since the consumer could not justify the extra expense associated with the organic produce. The processors who indicated that price was a restraining factor to market growth tended to be those processors who added little value to the product (eg producers of flour and breads. Those produces who added more value to the product tended to report that supply constraints were more of a constraining factor to growth than price. This would support the supposition the greater the value added to the product the harder it becomes for the consumer to make price comparisons and that the consumers may be prepared to pay higher prices.

7.0 Existing channels of distribution.

The survey results suggest that distribution is a problem. Those retailers who are selling fresh organic produce are buying directly from the producer. Yet the majority of producers are small and quantity and quality of supply becomes a problem. Manufacturers are also experiencing this problem. Their are a few specialized wholesalers and buying cooperatives but distribution of organic products will have to be strengthened before the major food processors become involved in the market. Large wholesalers have not become involved with organic produce because of the expensive audit trail required to maintain the integrity of the product from grower to the end product. This audit trail becomes complex and expensive as more individuals are involved in the distribution channel and the potential for tainted product increases with the complexity of the product. It is likely that the first national food processors who enter the organic market will do so using product grown on their own farms.

7.1 Channels used by producer.

Distribution of the finished crop.

Many of the grain producers, outside of Saskatchewan, indicated that they kept their organic grains to feed to their livestock.

In Saskatchewan, the majority of respondents indicated that they sold their grains and oilseeds to the elevator with producers indicating that on average 77% of their grain crop and 87% of the oilseed crop was moved through the elevator. Other important channels for grains were Millers, Wholesalers, Brokers and Processors who accounted for the remaining third of grain movements.

Similar results were obtained for the sample as a whole but a greater percentage of grains, up to 60%, were moved through the farm itself, either through direct sales or as animal feed. Direct sales did not play a significant role for the movement of Saskatchewan grains. Oilseeds, outside of Saskatchewan, were also moved directly to a Processor and Brokers also played a significant role in the movement of oilseeds.

The respondents who produced vegetables sold the produce via:
(in declining order of importance)
Farm Store/Roadside
Wholesalers
Health food stores
Independent food stores
Supermarkets

These distribution outlets indicate the small size of the market with the majority of the produce being sold directly to the customer. Some producers are supplying commercial outlets, either directly via the independent, supermarket or health food store or indirectly via the wholesaler. The supermarket is the largest retailer of vegetables yet is receives very few deliveries from the producer indicating that the market for organic vegetables remains small.

The small herd sizes was reflected in the production of meat with the majority of producers either selling directly to the consumer through their own farm shop or selling directly to a producer. Brokers, Wholesalers, Independents and Health food stores were also utilized by some of the producers.

Most of the poultry was sold through the farm store again suggesting that the sale of organic livestock is a small local operation.

The traditional outlets for handling organic produce have been the Elevators and the Roadside stall both of which started handling organic produce in 1977. By the early 1980's Millers, Wholesalers, Processors, Health food stores and Independent food stores were handling organic produce and by the end of the 1980's supermarkets were just entering the distribution channels.

7.2 Where the retailer obtains product.
Channels of distribution.

For all product ranges two channels of distribution are utilized:

Direct from the producer
From a wholesaler or distributor.

This latter channel is the more popular accounting for approximately 80% of the produce purchased. Processed products are more likely to be supplied by the Miller or a Wholesaler/Distributor and some Vegetables are purchased form Producer Cooperatives.

Meats, Dairy and Vegetables are purchased directly from the producer and the producers survey indicated that the volume produced by these individual producers is small. In these situations the retailer is probably indicating that supply needs to be increased.

7.3 Where the Processor obtains products.

The food processors indicated that supply was a major problem. The one national company which had been in the organic market for 10 years was buying direct from growers

and from some specialized cooperatives. Many food processors were unable to comment on distribution systems as they were in the process of securing sources of supply yet most recognized that this would be a major problem given the size of most producers.

8.0 The reported efficiency of an organic production operation.

Two thirds of the respondents specified the impact that organic farming had produced on their operation. The remaining one third either did not comment or indicated that they had always been organic producers and could not provide a comparison.

The total sample indicated that during a normal crop year **the average cost saving of organic over "regular" farming practices was 18%.** Yields were stated to decline 6% on average. During drought conditions costs were said to decline by 15% and the yield by 5%.

The Saskatchewan respondents, who produced mainly grains with some livestock, **reported a 19% decline in operating costs and a 4% yield reduction** during a normal crop year and a 19% cost saving in a drought year with a 3% yield reduction.

Frequency of cost changes as indicated by the respondents:

	Total survey		Saskatchewan	
	#	%	#	%
Cost increase	8	12	1	4
No cost change	2	3	2	7
Under 5% reduction	4	6	2	7
Between 5% & 10%	10	15	2	7
Between 10% & 20%	15	22	9	33
Between 20% and 30%	17	25	8	30
Over 30%	12	18	3	11
Total	68		27	

Organic farming appears to provides producers with a cost saving in excess of 5% and the Saskatchewan producers, who are predominant grain producers indicate a saving in excess of 10%.

Frequency of yield changes as indicated by the respondents:

	Total survey		Saskatchewan	
	No.	%	No.	%
Yield inc				
Over 10%	2	3	1	4
Between 5% & 10%	8	12	5	18
Between 0% & 5%	7	10	1	4
No yield change	11	16	5	18
Yield decrease				
Under 5% reduction	10	15	3	11
Between 5% & 10%	12	18	5	18
Between 10% & 20%	10	15	6	22
Between 20% and 30%	6	9	1	4
Over 30%	2	2	0	0
Total	68		27	

The impact of organic farming on yield appears to be difficult to measure. The majority of respondents indicate a reduction in yield but only one quarter of the producers indicate that the yield reduction is greater than 10%.

Appendix 1
Study Methodology.

All producers in "The Directory of Organic Agriculture 1989" were included in the sample. This accounted for 255 producers from across Canada: The breakdown by province was:

E. Coast	12
Quebec	25
Ontario	167
W Canada	22
Sask	10

In order to increase the representation of Saskatchewan, in the sample, 190 questionnaires were sent to Elmer Laird, President of the Canadian Organic Producers Marketing Cooperative and 150 were sent to Neil Strayer, Provincial representative of the OCIA. Both of these individuals were to forward the questionnaire to their membership.

Thus the total mailed sample 465 producer questionnaires.

Sample selection and response rates.
From the Producers survey

The initial mailing to the membership of the Directory of Organic Agriculture produced approximately 60 responses and the total response was 104 questionnaires giving a response rate of 22%.
This sample must be considered a convenience sample and some bias will be present since the respondents are organic farmers and the questionnaire is seeking their opinions on organic farming.

Regional responses were as follows:

	Total	Percentage
Saskatchewan	37	36%
Ontario	35	34%
Rest of Canada	32	30%

From the Retailer Survey
Sample selection.

All retailers in "The Directory of Organic Agriculture 1989" were included in the sample together with all of the retailers listed in the "Survey of Canadian Retailers", published in the July 1989 edition of Canadian Grocer. In total 89 surveys were distributed. The retailers selected from the Directory of Organic Agriculture were primarily

Health Food Stores while Independent grocery stores and Supermarkets were included in the Canadian Grocer listing. For these retailers the questionnaire was sent to the Head Buyer for Fruit and Vegetables as identified in the publication.

Response.

The response to the retail and distributor questionnaire was disappointing and a telephone follow up was undertaken to ensure that the major players were involved in the study. Attempts at contacting the major retailers were also disappointing and eventually 33 retailers and distributors were contacted, nine of which were supermarkets.

Food Processors.

Using the Saskatchewan Manufacturers Guide, the twenty largest (measured by number of employees) food processing companies were identified and contacted by telephone. Using the Buyers Guide to Canadian Processed Foods from Agriculture Canada twelve of the largest were contacted:

Canada Packers
General Foods
Burns Foods
Kellogs
Pillsbury
Campbell
Catelli
McCains
Nestle
Kraft
Robin Hood
Heinz

Appendix 2
Profile of the respondents.

Retail profile

The breakdown of the responses to the questionnaire were as follows:

Category	Number
Health Food Store	12
Other Specialty	3
Indept Grocery	1
Supermarket	7
Distributor	12

Five of the seven supermarkets are retailing organic foods consequently the there will be a bias in the responses in favour of organic foods. One could argue that a percentage of the non-response did not return the questionnaire as they felt that organic foods had no future in the industry.

Size of Respondent.
Just over half (61%) of the respondents reported annual sales revenues in excess of $500,000. Twenty two percent reported sales volumes between $100,000 and $500,000 and the remaining 17% indicated an annual sales volume under $100,000.

Product Range.

Vegetables and Fruits were carried by 86% of the respondents and were the product most likely to be found in the retail stores carrying organic produce. Processed products (Flour, Juices, Grains and Breads) were present in the stores of two thirds of the respondents

Meats were present in approximately half of the cases. Beef and Chicken were the most likely meat to be found in the retail outlets with Pork and Lamb hardly represented at all.

Dairy and Specialty products were carried by approximately half of the outlets.

The supermarkets, who responded to the survey, tended to carry only Organic Fruits and Vegetables. One supermarket did carry organically reared meats.